MiniChef™ 2000

Applications 1 - 6
Cook-&-Hold Oven Applications Guide

Programming & Operating Steps

WATLOW

C E 97

TOTAL
CUSTOMER
SATISFACTION

ISO 9001

Registered Company
Winona, Minnesota USA

Table of Contents

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Application 1
Automatic Cook-&-Hold Oven with Meat Probe Option

One Heat Channel, Six Menus

Application 1 allows you to program as many as six menu keys to control one temperature channel, a fan and cooking time for an automatic cook-&-hold oven with or without a meat probe.

Overview of Key Steps

1.   Install the MINICHEF 2000.
2.   Wire the controller.
3.   Configure the controller.
4.   Program the menus.
5.   Set the controller security.
6.   Set the Real-time Clock.

For instructions on Steps 1, 2, 3, 4, 5 and 6, see the *Hardware & Software Setup Guide*.

7.   Design, manufacture and apply faceplate overlay for end-users. (For a suggested design to suit this application, see this section. For overlay dimensions and guidelines, see the *Hardware & Software Setup Guide*.)
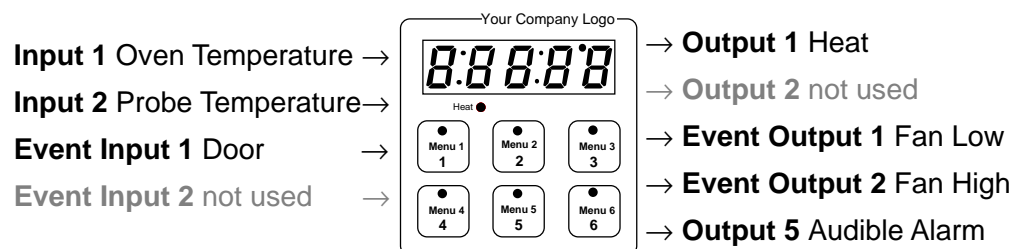8.   Operate the controller. (See this application guide.)

Key Functions in Configuration Mode

MINICHEF 2000

Display five-digit, seven-segment numeric LED display.

Indicator lights (1 for each key, 2 for heat channels).

G   H

A   Edit
Edit key (A) Access the next level of parameters or values.

B   Enter
Enter key (B) Enter the value and return to previous level.

C
Up key (C) Move up the lists.

D   Home
Home key (D) Move to Operation Mode with a two-second key press.

E   Escape
Escape key (E) Return to original value when editing a parameter value.

F
Down key (F) Move down the lists.

Key Functions in Operation Mode

Your Company Logo

Heat Indicator Light Lit when heat output is on.

Heat

Menu 1   Menu 2   Menu 3

Menu 4   Menu 5   Menu 6

Menu Keys Activate and cancel menus, activate cook cycle when preheating, and acknowledge alarms.

Menu Key Indicator Lights
Slow flash.........Preheating
Rapid flash...............Ready
Lit.........................Cooking
Rapid flash.................Done
Slow flash..............Idle and regulating temp to previous set point
Not lit.....No menu selected

Summary of Input/Output Functions

Your Company Logo

Heat

Menu 1   Menu 2   Menu 3
   1   2   3
Menu 4   Menu 5   Menu 6
   4   5   6

Input 1 Oven Temperature →

Input 2 Probe Temperature →

Event Input 1 Door →

Event Input 2 not used →

→ **Output 1** Heat

→ **Output 2** not used

→ **Event Output 1** Fan Low

→ **Event Output 2** Fan High

→ **Output 5** Audible Alarm

Note: For details, see wiring instructions in the *Hardware & Software Setup Guide.*

Configuration Mode Quick Reference

These are the functions, parameters and values included in the Configuration Mode for this application. You must select Application 1 to access them. For directions, see the *Hardware & Software Setup Guide*. The Appendix of that guide includes an explanation of all parameters and values.

Function	Parameter	Value	Your Settings
`EtYPE` Equipment-Type	`APPL` Application Number	1 - 28	1
	`A_Loc` Application Number Security Lock	Yes, No	
	`Sound` Audible Alarm Sound	0 - 5	
	`FAn` Fan Speed	1 spd, 2 spd	
	`dELAY` Fan Delay Time	0 - 120 minutes	
`SEtUP` Setup	`T_F` Temperature Display Format	°C or °F	
	`tiME` Time Display Format	MMM:SS, HH:MM, H:MM:SS (H=Hours, M=Minutes, S=Seconds)	
	`ChirP` Key Chirp	On, Off	
	`Loc` Menu Security Lock	Yes, No	
	`tc` Thermocouple Type	J, K (shown as `H`), E	
	`rtd` RTD Curve	DIN, JIS	
	`tconP` WatCurve™ Temperature Compensation	On, Off	
	`OFSt1` Temp. Offset, Channel 1	-99 to 99°F (-55 to 55°C)	
	`OFSt2` Temp. Offset, Channel 2	-99 to 99°F (-55 to 55°C)	
	`tr Lo` Temperature Range Low	0ºF (-18^{0}C) for RTD inputs, 32^{0}F (0^{0}C) for tc inputs to `tr Hi`	
	`tr Hi` Temperature Range High	`tr Lo` to 1200°F (649°C)	
	`rEAdY` Preheat Ready Feature	Yes, No	
	`rbAnd` Ready Band	1 to 1200°F (649°C)	
	`CLoc` Real Time Clock Display	Yes, No	
	`PLOSS` Power Loss Menu Resume	Yes, No	
	`AL 1` Alarms for Channel 1	None, Dev, Proc, Both	
	`AL P1` Absolute Process Alarm 1	100 to 1200°F (38 to 649°C)	
	`ALdL1` Low Deviation Alarm 1	-999 to 0°F (-555 to 0°C)	
	`ALdHi` High Deviation Alarm 1	0 to 999°F (0 to 555°C)	
	`AL 2` Alarm for Channel 2	None, Dev, Proc, Both	
	`AL P2` Absolute Process Alarm 2	100 to 1200°F (38 to 649°C)	
	`ALdL2` Low Deviation Alarm 2	-999 to 0°F (-555 to 0°C)	
	`ALdH2` High Deviation Alarm 2	0 to 999°F (0 to 555°C)	
`tHErL` Thermal	`tYPE` Temperature Control Type	PID, On-Off	
	`HYSt1` Hysteresis 1	1 to 99°F (1 to 55°C)	
	`Pid U` PID Units	SI, US	
	`tunE1` Auto-tuning 1	on, OFF	
	`ProP1` Proportional Band 1	1 to 999°F (1 to 555°C)	
	`rSEt1` Reset (integral) Gain 1	0.00 to 9.99 repeats/minute	
	`int 1` Integral Gain 1	0.00 to 99.99 minutes/repeat	
	`rAtE1` Rate (derivative) Gain 1	0.00 to 9.99 minutes	
	`dEr 1` Derivative Gain 1	0.00 to 9.99 minutes	
	`CYcL1` PID Cycle Time 1	1 to 60 seconds	
`diA9` WatHelp Diagnostics	Used for equipment troubleshooting and testing. Not used when programming. See the *Hardware & Software Setup Guide.*		

Program Mode Quick Reference

These are the functions, parameters and values included in the Program Mode for this application. You must select Application 1 to access them. For menu programming directions, see the *Hardware & Software Setup Guide*. The Appendix of that guide includes a detailed explanation of all parameters and values.

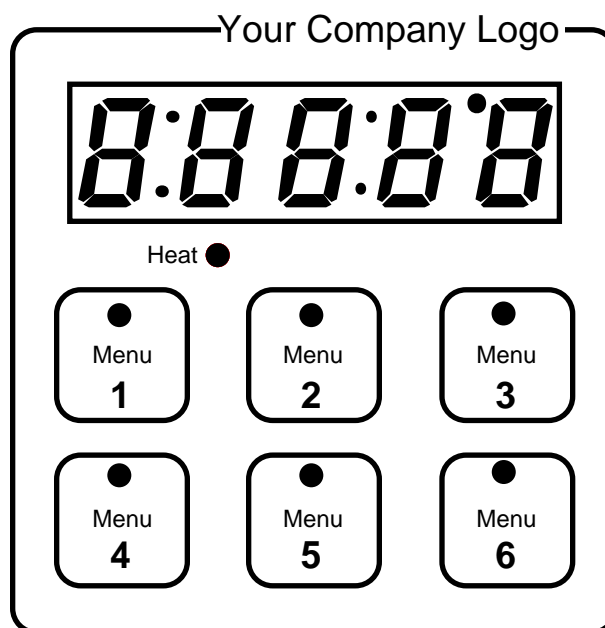| Function	Parameter	Value	Your Settings
`P9 __` Menu Numbers 1 - 6	`StPt 1` Set point 1 Temperature of set point 1.	Temp range low to temp range high	
	`t ME 1` Time 1 Run time of set point 1.	Format varies based on configuration.	
	`FAn 1` Fan 1 Speed Speed of fan 1 during time 1.	Single Speed: On, Off Two Speed: Off, Low, High	
	`StPt2` Set point 2 Temperature of set point 2.	Temp range low to temp range high	
	`t ME2` Time 2 Run time of set point 2.	Format varies based on configuration.	
	`FAn 2` Fan 2 Speed of fan during time 2	Single Speed: On, Off Two Speed: Off, Low, High	
	`ProbE` Probe Activates probe function.	On, Off	
	`PtEnP` Probe Temperature Temperature at which probe will switch controller to hold condition.	Temp range low to temp range high	
	`HStPt` Hold Set point Temperature at which the oven will operate during hold sequence.	Temp range low to temp range high	
	`Ht nE` Hold Time Run time of hold sequence.	0 = infinite. A setting >0 = hold time. Format varies based on configuration.	
	`H FAn` Hold Fan Speed of fan during hold time.	Single Speed: On, Off Two speed: Off, Low, High	

Auto-tuning Note:

Before auto-tuning Application 1, Set Point 1 of Menu 1 must first be set to a value that is typical of your application. (See the *Hardware & Software Setup Guide* for information on programming menus.) Then set `tHErL` / `tunE 1` to `on`. After you accept `on`, by pressing "Enter," the controller will display `tunE` while auto-tuning is taking place.

The controller will cancel the auto-tuning process if it cannot be completed in 80 minutes. You can cancel the auto-tuning process at any time by pressing either key C or key D and accepting `OFF`, by pressing "Enter," when it appears.

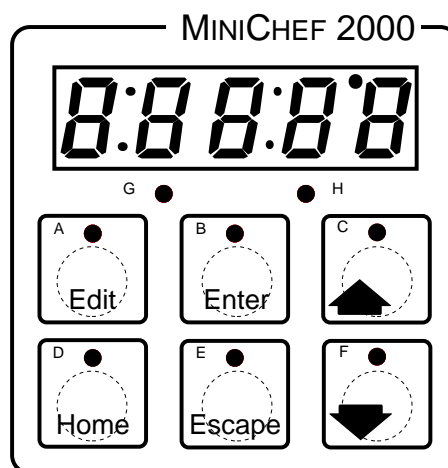# Step 7 Design a Faceplate Overlay

To complete the installation, you must apply a graphic membrane to the front panel of the controller. The following artwork will help you design and create a membrane for this application. For more dimensions and guidelines, see the *Hardware & Software Setup Guide.*

Suggested End-user Overlay:

Your Company Logo

Heat ●

| Menu 1 | Menu 2 | Menu 3 |
| Menu 4 | Menu 5 | Menu 6 |

This Prototyping and Training Membrane Overlay will help you with the configuration and programming steps. To order it, see the Ordering Information at the back of this guide.

MINICHEF 2000

G ●   H ●

| A ● Edit | B ● Enter | C ● ▲ |
| D ● Home | E ● Escape | F ● ▼ |

Step 8 Operate the Controller

Summary of Key Functions in Operation Mode

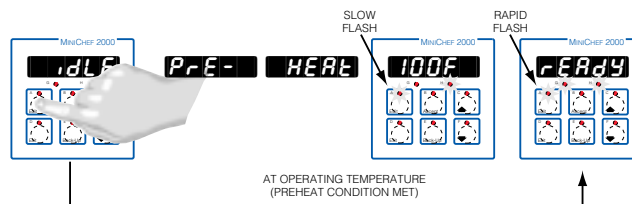| Key	Function
A	Menu 1
B	Menu 2
C	Menu 3
D	Menu 4
E	Menu 5
F	Menu 6

Startup

Apply power to the oven.

`idLE` will appear on the display.

If the Real Time Clock Display option is installed and **`SEtUP`** / **`CLoc`** = **`YES`**, the time of day will appear on the display.

Preheat

If the **`rEAdy`** parameter under the **`SEtUP`** function in the Configuration Mode is set to **`YES`**, the controller will detect temperatures and preheat to operating temperature (set point minus the ready band).

SLOW FLASH   RAPID FLASH

AT OPERATING TEMPERATURE
(PREHEAT CONDITION MET)

• Press the key for the menu you want to run. Each key selects a different menu. You can select from up to six menus that control temperature and cooking time. Only one menu may be run at a time.

Note: The controller will not respond if you select an invalid menu (one for which the sum of Time 1 and Time 2 is 0).

The menu you have chosen becomes the current menu for controller operation. Until the menu is completed or canceled, the indicator light above the menu key will light up (flashing or steady) to indicate the active menu.

• If the oven is not at operating temperature, it will preheat. Meanwhile:

The word **`PrE-`** **`HEAt`** will appear on the display for a few moments. The menu key indicator light will flash slowly. The temperature of Channel 1 will be displayed until the operating temperature is reached.

(The Heat output indicator light — G, just below the display — will light up whenever the controller is calling for heat.)

When the oven is at operating temperature (set point minus the ready band) `rEAdY` will appear on the display and the menu key indicator light will flash rapidly. You are now ready to cook with the active menu.
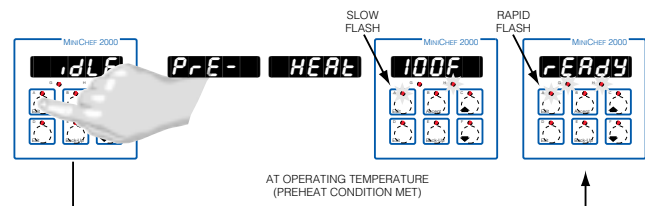
- If the oven is at operating temperature, the display goes directly to `rEAdY` without indicating preheat or temperature.

Note: You can skip preheat and go directly to the cooking sequence by pressing the menu key a second time.

Run a Menu (with preheat feature)

This procedure describes how to run an active menu when the preheat feature is active (when the `rEAdY` parameter in the `SEtUP` function of the Configuration Mode is set to `YES`).
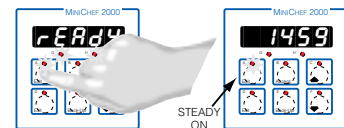
1. With `idLE` or time of day on the display, press the key for the menu you want to run.

SLOW FLASH   RAPID FLASH

AT OPERATING TEMPERATURE (PREHEAT CONDITION MET)

If the preheat condition has not been met, the oven will preheat until `rEAdY` appears on the display.

Note: You can skip preheat and go directly to the cooking sequence by pressing the menu key a second time.

If the oven is already at operating temperature, `rEAdY` will appear on the display.

STEADY ON

2. With `rEAdY` on the display, place the food in the oven and insert the meat probe (if necessary). Then press the active menu key (indicated by the rapidly flashing LED).

The menu key indicator light will light up. Time will count down on the display.

The unit will run the following two-step cooking sequence:

Countdown time is displayed. It is the total of the programmed Time 1 plus Time 2.

Set point 1 and Fan 1 will run until Time 1 expires.

Set point 2 and Fan 2 will run until Time 2 expires. You will not see the switch-over from Time 1 to Time 2.

3. If the probe parameter has been selected `on`, the oven will run the probe sequence when the cooking sequence is complete.

`ProbE` will appear on the display.

The unit will continue to cook until the food reaches the programmed probe temperature.

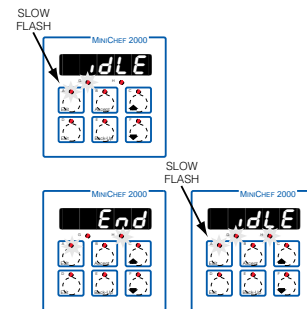4. Once the cooking sequence (and the probe sequence, if run) is complete, the unit will

switch to the Hold sequence. The display will alternate slowly between Hold and count up time.
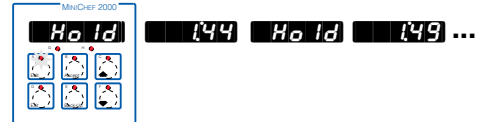
If the Hold time `Ht inE` parameter has been set to 0, the unit will count up time indefinitely. The hold sequence will end and the controller will go into idle when you cancel the current menu by pressing the active menu key.

If `Ht inE` is greater than 0, the unit will run the hold sequence until the hold time expires. It will then switch to the sequence described in 5.

5. When the cooking cycle is finished, one of the following will happen, depending on the way the controller was programmed at `EtYPE` / `Sound`.

With Sound set to 0: The controller automatically switches to idle, in which the controller does not maintain temperature and does not run time. `idLE` or current time of day will appear on the display. The menu key indicator light will be off.

With Sound set to 1, 2, or 3: `End` will appear on the display and an audible tone will be emitted. The menu key indicator light will flash rapidly. You can acknowledge and silence the tone by pressing the active menu key or it will automatically time out within 20 seconds and go into idle.

With Sound set to 4 or 5: `End` will appear on the display and the menu key indicator light will flash rapidly. You must acknowledge the audible tone by pressing the active menu key. Once acknowledged the audible tone is silenced and the controller goes into idle.

6. Once the controller goes into idle, the menu key indicator light and the heat outputs will switch off. The controller will not regulate to any temperature.

7. To repeat cooking, repeat steps 1 through 4 or 5.

Run a Menu (without preheat feature)

This procedure describes how to run an active menu when the preheat feature is inactive — in other words, when the `rEAdY` parameter in the `SEtUP` function of the Configuration Mode is set to `no`.

1. With idle on the display, place food in the oven and insert meat probe (if necessary).
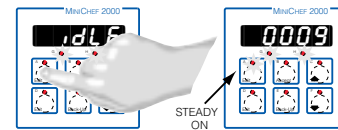
2. Press the key for the menu you want to run.
   The menu key indicator will light up. Time will count down on the display.
   The unit will run the following two-step cooking sequence:
   Countdown time is displayed. It is the total of the programmed Time 1 plus Time 2.
   Set point 1 and Fan 1 will run until Time 1 expires.
   Set point 2 and Fan 2 will run until Time 2 expires. You will not see the switch-over from Time 1 to Time 2.
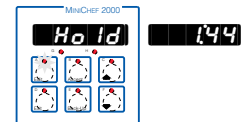
3. When the timed cooking sequence is complete, the oven will run the probe cooking sequence, if the probe parameter has been selected `on`, `ProbE` will appear on the display.

   The unit will continue to cook until the food reaches the programmed probe temperature.

4. Once the entire cooking sequence (timed cook and probed cooking) is complete, the unit will switch to the Hold sequence.

   The display will alternate slowly between Hold and count up time. If the Hold time parameter `Ht inE` has been set to 0, the unit will count up time indefinitely. If Hold time `Ht inE` is greater than 0, the unit will run the hold sequence until the hold time expires. It will then switch to the sequence described in 5.

   The hold sequence will end when you cancel the current menu or activate another.

5. When the cook-&-hold cycle is finished, one of the following will happen, depending on the way the controller was programmed at `EtYPE` / `Sound`:

   With Sound set to 0: The controller automatically switches to idle, in which the controller does not maintain temperature and does not run time. `idLE` or current time will appear on the display. The menu key indicator light will be off.

   With Sound set to 1, 2, or 3: `End` will appear on the display and an audible tone will be emitted. The menu key indicator light will flash rapidly. You can acknowledge and silence the tone by pressing the active menu key or it will time out in 1 to 20 seconds and go into idle.

   With Sound set to 4 or 5: `End` will appear on the display and the menu key indicator light will flash rapidly. You must acknowledge the audible signal by pressing the active menu key. Once acknowledged the tone is silenced and the controller goes into idle.

6. Once the controller goes into idle, the menu key indicator light and the heat outputs will switch off. The controller will not regulate to any temperature.

7. To repeat cooking, repeat steps 1 through 4 or 5.

Pause a Menu

While cooking, you can pause cooking time by pressing the active menu key once. The menu key indicator light will flash rapidly.

Countdown time will resume when you press the active menu key again.

Cancel a Menu

Canceling a menu stops controller operation completely. The controller does not maintain set point temperatures or run time. You cancel a menu to run another menu, stop menu operation for any reason, or are preparing to shut off the oven.

- Press the active menu key for 2 seconds. In hold, momentarily press the menu key. Heat outputs will switch off. Heat output indicator lights will switch off. `idLE` or time of day will be on the display.

Change Menus or Restart

1. If the controller is preheating or running a menu, cancel the menu by pressing and holding the active menu key for 2 seconds. If the controller is in `idLE` go to 2.

2. Press the key for the menu you want to run. Based on its programming, the unit will run the menu in one of the ways described earlier.

Door Opening

When you open the oven door (uses Event Input 1 for switch closure. Switch closure indicates the door is open) the unit will act as described below.

During the cooking sequence: time is paused — `door` will appear on the display.

The heat and fan will be shut off.

During the preheat or hold sequence: `door` will appear on the display. The heat and fan will be shut off. When you close the door, the unit will operate normally.

Event Outputs

While running a menu:

When Low fan speed (or single-speed fan) is on, Event Output 1 is on.

When High fan speed is on, Event Output 2 is on.

⚠

WARNING: Starting or initiating a menu can cause or initiate fan motion. Appropriate reasonable care should be taken to prevent personal injury or machine damage as a result of operator initiated or unexpected fan motion.

Temperature Alarms

The controller will alert you to temperature alarm conditions if they occur. If an alarm occurs, take action as determined by your supervisor. See the Appendix in the *Hardware & Software Setup Guide* for a Troubleshooting Chart and a summary of temperature alarms.

Errors

The controller will alert you to errors if they occur. Errors are critical problems that shut down the unit. If an error occurs, an error message will appear on the display. You should switch off the power and call for service.

See the Appendix in the *Hardware & Software Setup Guide* for a Troubleshooting Chart and a summary of errors.

2

Application 2
Automatic Cook-&-Hold Oven with Meat Probe Option

One Heat Channel, 17 Menus

Application 2 allows you to program as many as 17 menus to control one temperature channel, a fan and cooking time for an automatic cook-&-hold oven with or without a meat probe. The application includes a two-step cooking sequence and a hold function.
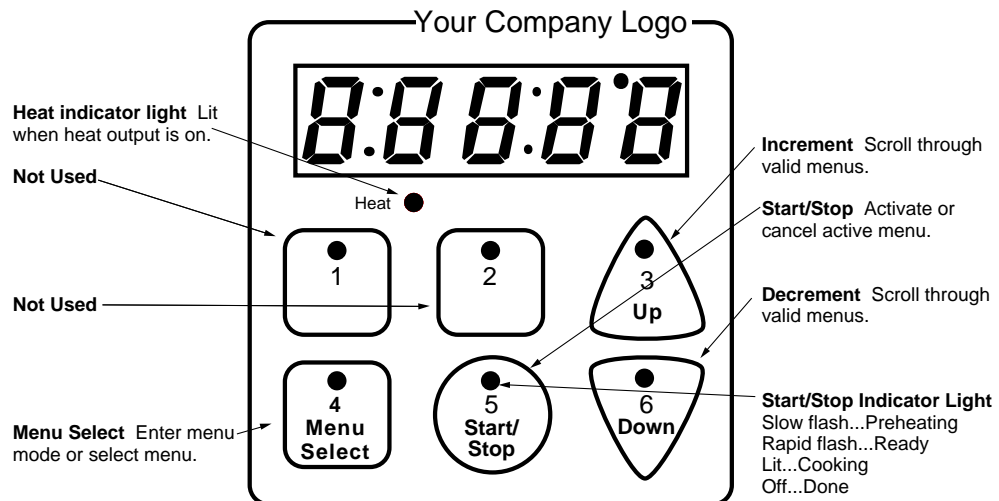
Overview of Key Steps

1. Install the MINICHEF 2000.
2. Wire the controller.
3. Configure the controller.
4. Program the menus.
5. Set the controller security.
6. Set the Real-time Clock.

For instructions on Steps 1, 2, 3, 4, 5 and 6, see the *Hardware & Software Setup Guide*.

7. Design, manufacture and apply faceplate overlay for end-users. (For a suggested design to suit this application, see this section. For overlay dimensions and guide-lines, see the *Hardware & Software Setup Guide*.)
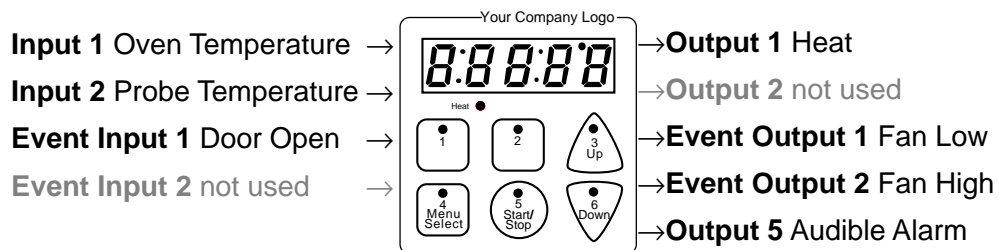8. Operate the controller. (See this application guide.)

Key Functions in Configuration Mode

MINICHEF 2000

Display five-digit, seven-segment numeric LED display.

Indicator lights (1 for each key, 2 for heat channels).

Edit key (A) Access the next level of parameters or values.

Enter key (B) Enter the value and return to previous level.

Home key (D) Move to Operation Mode with a two-second key press.

G   H

A Edit   B Enter   C ▲

D Home   E Escape   F ▼

Up key (C) Move up the lists.

Escape key (E) Return to original value when editing a parameter value.

Down key (F) Move down the lists.

Key Functions in Operation Mode

Your Company Logo

Heat indicator light Lit when heat output is on.

Not Used

Not Used

Menu Select Enter menu mode or select menu.

Heat

1   2   3 Up

4 Menu Select   5 Start/ Stop   6 Down

Increment Scroll through valid menus.

Start/Stop Activate or cancel active menu.

Decrement Scroll through valid menus.

Start/Stop Indicator Light
Slow flash...Preheating
Rapid flash...Ready
Lit...Cooking
Off...Done

Summary of Input/Output Functions

Input 1 Oven Temperature →

Input 2 Probe Temperature →

Event Input 1 Door Open →

Event Input 2 not used →

Your Company Logo

Heat

1   2   3 Up

4 Menu Select   5 Start/ Stop   6 Down

→**Output 1** Heat

→**Output 2** not used

→**Event Output 1** Fan Low

→**Event Output 2** Fan High

→**Output 5** Audible Alarm

Note: For details, see wiring instructions in the *Hardware & Software Setup Guide.*

Configuration Mode Quick Reference

These are the functions, parameters and values included in the Configuration Mode for this application. You must select Application 2 to access them. For directions, see the *Hardware & Software Setup Guide*. The Appendix of that guide includes an explanation of all parameters and values.

Function	Parameter	Value	Your Settings
`EtYPE` Equipment-Type	`APPL` Application Number	1 - 28	2
	`A.Loc` Application Number Security Lock	Yes, No	
	`Sound` Audible Alarm Sound	0 - 5	
	`FAn` Fan Speed	1 spd, 2 spd	
	`dELAY` Fan Delay Time	0 - 120	
`SEtUP` Setup	`t_F` Temperature Display Format	°C or °F	
	`timE` Time Display Format	MMM:SS, HH:MM, H:MM:SS	
	`ChirP` Key Chirp	On, Off	
	`Loc` Menu Security Lock	Yes, No	
	`tc` Thermocouple Type	J, K (shown as `H`), E	
	`rtd` RTD Curve	DIN, JIS	
	`tconP` WatCurve™ Temperature Compensation	On, Off	
	`OFSt1` Temp. Offset, Channel 1	-99 to 99°F (-55 to 55°C)	
	`OFSt2` Temp. Offset, Channel 2	-99 to 99°F (-55 to 55°C)	
	`tr Lo` Temperature Range Low	0°F (-18°C) for RTD inputs 32°F (0°C) for tc inputs to `tr Hi`	
	`tr Hi` Temperature Range High	`tr Lo` to 1200°F (649°C)	
	`rEAdY` Preheat Ready Feature	Yes, No	
	`rbAnd` Ready Band	1 to 1200°F (649°C)	
	`CLoc` Real Time Clock Display	Yes, No	
	`PLOSS` Power Loss Menu Resume	Yes, No	
	`AL 1` Alarm for Channel 1	None, Dev, Proc, Both	
	`AL P1` Absolute Process Alarm 1	100 to 1200°F (38 to 649°C)	
	`ALdL1` Low Deviation Alarm 1	-999 to 0°F (-555 to 0°C)	
	`ALdH1` High Deviation Alarm 1	0 to 999°F (0 to 555°C)	
	`AL 2` Alarm for Channel 2	None, Dev, Proc, Both	
	`AL P2` Absolute Process Alarm 2	100 to 1200°F (38 to 649°C)	
	`ALdL2` Low Deviation Alarm 2	-999 to 0°F (-555 to 0°C)	
	`ALdH2` High Deviation Alarm 2	0 to 999°F (0 to 555°C)	
`tHErL` Thermal	`tYPE` Temperature Control Type	PID, On-Off	
	`HYSt1` Hysteresis 1	1 to 99°F (1 to 55°C)	
	`Pid U` PID Units	SI, US	
	`tunE1` Auto-tuning 1	on, OFF	
	`ProP1` Proportional Band 1	1 to 999°F (1 to 555°C)	
	`rSEt1` Reset (integral) Gain 1	0.00 to 9.99 repeats/minute	
	`int 1` Integral Gain 1	0.00 to 99.99 minutes/repeat	
	`rAtE1` Rate (derivative) Gain 1	0.00 to 9.99 minutes	
	`dEr 1` Derivative Gain 1	0.00 to 9.99 minutes	
	`CYcL1` PID Cycle Time 1	1 to 60 seconds	
`diAg` WatHelp Diagnostics	Used for equipment troubleshooting and testing. Not used when programming. See the *Hardware & Software Setup Guide*.		

Program Mode Quick Reference

These are the functions, parameters and values included in the Program Mode for this application. You must select Application 2 to access them. For menu programming directions, see the *Hardware & Software Setup Guide*. The Appendix of that guide includes a detailed explanation of all parameters and values.

Function	Parameter	Value	Your Settings
`MM` Menu Numbers 1 - 17	`SEPE 1` Set point 1 Temperature of set point 1.	Temp range low to temp range high	
	`t iME 1` Time 1 Run time of set point 1.	Setting both Time 1 and Time 2 at 0 invalidates selected menu. Format varies based on configuration.	
	`FAn 1` Fan 1 Speed Speed of fan 1 during time 1	Single Speed: On, Off Two Speed: Off, Low, Hghi	
	`SEPE2` Set point 2 Temperature of set point 2.	Temp range low to temp range high	
	`t iME2` Time 2 Run time of set point 2.	Setting both Time 1 and Time 2 to 0 invalidates selected menu. Format varies based on configuration.	
	`FAn 2` Fan 2 Speed of fan during time 2	Single Speed: On, Off Two Speed: Off, Low, High	
	`ProbE` Probe Activates probe function.	On, Off	
	`PtEmP` Probe Temperature Temperature at which probe will switch controller to hold condition.	Temp range low to temp range high	
	`HSEPE` Hold Set point Temperature at which the oven will operate during hold sequence	Temp range low to temp range high.	
	`Ht inE` Hold Time Run time of hold sequence.	0 = infinite. A setting >0 = hold time. Format varies based on configuration.	
	`H FAn` Hold Fan Speed of fan during hold time.	Single Speed: On, Off Two speed: Off, Low, High	

Auto-tuning Note:

Before auto-tuning Application 2, Set Point 1 of Menu 1 must first be set to a value that is typical of your application. (See the *Hardware & Software Setup Guide* for information on programming menus.) Then set `tHErL` / `tunE 1` to `on`. After you accept `on`, by pressing "Enter," the controller will display `tunE` while auto-tuning is taking place.
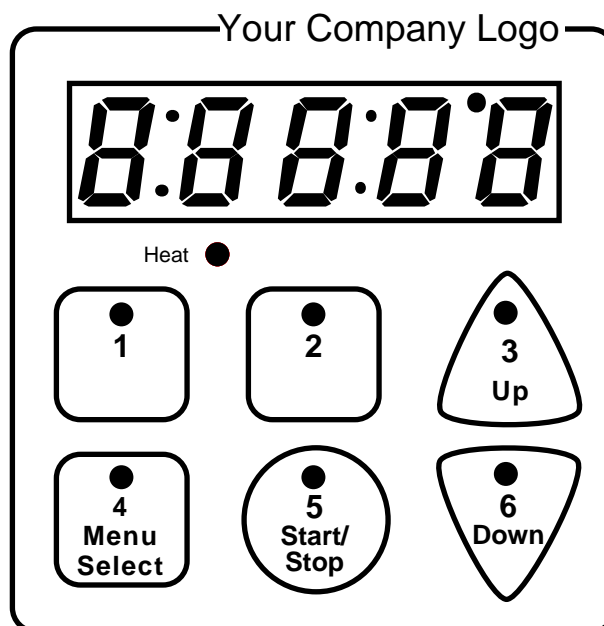
The controller will cancel the auto-tuning process if it cannot be completed in 80 minutes. You can cancel the auto-tuning process at any time by pressing either key C or key D and accepting `OFF`, by pressing "Enter," when it appears.
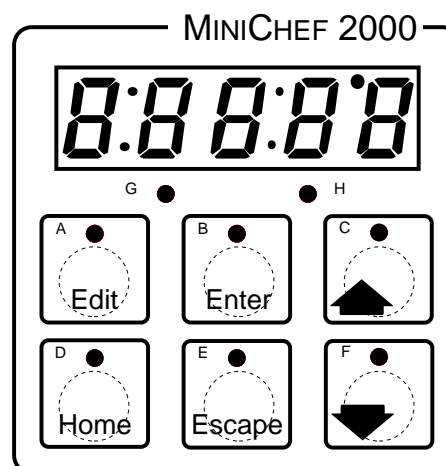
Step 7 Design a Faceplate Overlay

To complete the installation, you must apply a graphic membrane to the front panel of the controller. The following artwork will help you design and create a membrane for this application. For more dimensions and guidelines, see the *Hardware & Software Setup Guide*.

Suggested End-user Overlay:

This Prototyping and Training Membrane Overlay will help you with the configuration and programming steps. To order it, see the Ordering Information at the back of this guide.

Step 8 Operate the Controller

Summary of Key Functions in Operation Mode

| Key	Operation Function
A	None
B	None
C	Menu Increment
D	Menu Select
E	Start/Stop
F	Menu Decrement

Start-up

Apply power to the oven.

`idLE` will appear on the display.

If the Real Time Clock Display option is installed and **`SEtuP`** / **`CLoc`** = **`YES`**, the time of day will appear on the display.
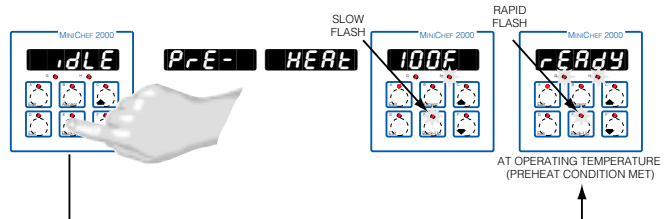
Select a Menu

1. Press the Menu Select key

   The controller will display the currently selected menu.
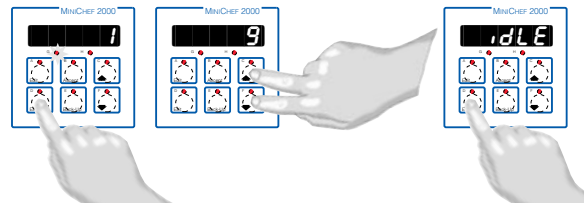
2. Press the Up-arrow or Down-arrow key until the menu you want appears on the display.

   The controller will only display valid menus (those for which Time 1 or Time 2 for the menu are set to greater than 0).

3. Press the Menu Select key again or press the Start key to immediately run the menu.

   The menu you have chosen becomes the current menu for controller operation.

Preheat

If the **`rEAdY`** parameter under the **`SEtUP`** function in the Configuration Mode is set to yes, the controller will detect temperatures and preheat to operating temperature (above relative set point minus the ready band).

- Activate the menu by pressing the Start/Stop key.

  If the oven is not at operating temperature, it will preheat. Meanwhile:

  The word `PrE-` `HEAt` will appear on the display for a few moments. The Start/Stop key indicator light will flash slowly. The temperature of Channel 1 will be displayed until the operating temperature is reached.

  (The heat output indicator light - G, just below the display- will light up whenever the controller is calling for heat.)

When the oven is at operating temperature (above the relative set point minus the ready band) `rEAdY` will appear on the display and the Start/Stop key indicator light will flash rapidly. You are now ready to cook with the active menu.
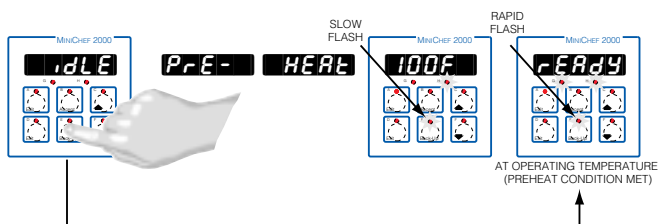
- If the oven is at operating temperature, the display goes directly to `rEAdY` without indicating preheat or temperature.

Note: You can skip preheat and go directly to the cooking sequence by pressing the Start/Stop key a second time.

Run a Menu (with preheat feature)

This procedure describes how to run an active menu when the preheat feature is active (when the `rEAdY` parameter in the `SEtUP` function of the Configuration Mode is set to `YES`).

1. Select the menu you want to run as shown earlier in "Select a Menu".

2. With `idLE` or time of day on the display, press the Start/Stop key.

If the preheat condition has not been met, the oven will preheat until ready appears on the display.

Note: You can skip preheat and go directly to the cooking sequence by pressing the Start/Stop key a second time.

If the oven is already at operating temperature `rEAdY` will appear on the display.
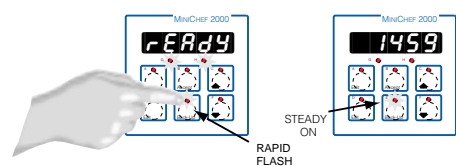
3. With `rEAdy` on the display, place the food in the oven and insert the meat probe (if necessary). Then press the Start/Stop key (indicated by the rapidly flashing indicator light).

   The Start/Stop key indicator will light up. Time will count down on the display.

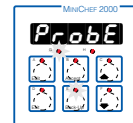   The unit will run the following two-step cooking sequence:

   Countdown time is displayed. It is the total of the programmed Time 1 plus Time 2.

   Set point 1 and Fan 1 will run until Time 1 expires.

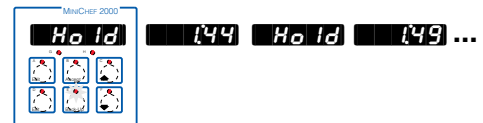   Set point 2 and Fan 2 will run until Time 2 expires. You will not see the switch-over from Time 1 to Time 2.

4. If the probe parameter has been selected `on`, the oven will run the probe sequence when the cooking sequence is complete:

   `ProbE` will appear on the display.

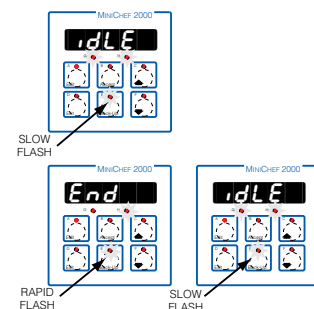   The unit will continue to cook until the food reaches the programmed probe temperature.

5. Once the cooking sequence (and the probe sequence, if run) is complete, the unit will switch to the Hold sequence. The display will alternate slowly between Hold and count up time.

   If the Hold time parameter `Ht inE` has been set to 0, the unit will count up time indefinitely. The hold sequence will end and the controller will go into idle when you cancel the current menu by pressing the Start/Stop key.

   If `Ht inE` is greater than 0), the unit will run the hold sequence until the hold time expires. It will then switch to the sequence described in 6.

6. When the cooking cycle is finished, one of the following will happen, depending on the way the controller was programmed at `EtYPE` / `Sound`.

   With Sound set to 0: The controller automatically switches to idle, in which the controller does not maintain the temperatures at set point and does not run time. `idLE` or current time will appear on the display. The Start/Stop key indicator

light will be off.

With Sound set to 1, 2, or 3: ▮▮ *End* will appear on the display and an audible tone will be emitted. The Start/Stop key indicator light will flash rapidly. You can acknowledge and silence the tone by pressing the Start/Stop key or it will automatically time out within 2 seconds for setting 1 or 20 seconds for settings 2 or 3 and then go into idle. The Start/Stop key indicator light will be off.

With sound set to 4 or 5: ▮▮ *End* will appear on the display and the Start/Stop key indicator light will flash rapidly. You must acknowledge the audible tone by pressing the Start/Stop key. Once acknowledged the audible tone is silenced and the controller goes into idle. The Start/Stop key indicator light will be off.

7. Once the controller goes into idle, the Start/Stop key indicator light and heat output will switch off. The controller will not regulate to any temperature.

8. To repeat cooking, repeat steps 1 through 5 or 6.

Run a Menu (without preheat feature)

This procedure describes how to run an active menu when the preheat feature is inactive - in other words, when the *rEAdy* parameter in the *SEtUP* function of the Configuration Mode is set to ▮▮ *no*.

1. Select the menu you want to run as shown earlier in "Select a Menu".

2. With idle on the display, place the food in the oven and insert the meat probe (if necessary).
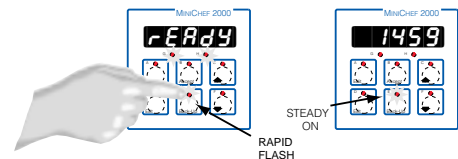
3. Press the Start/Stop key.

    The Start/Stop key indicator will light up. Time will count down on the display.

    The unit will run the following two-step cooking sequence:

    Countdown time is displayed. It is the total of the programmed Time 1 plus Time 2.

    Set point 1 and Fan 1 will run until Time 1 expires.

    Set point 2 and Fan 2 will run until Time 2 expires. You will not see the switch-over from Time 1 to Time 2.

4. When the timed cooking sequence is complete, the oven will run the probe cooking sequence (if the probe parameter is set to ▮▮ *on*) *ProbE* will appear on the display.
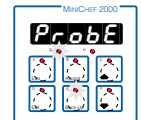
    The unit will continue to cook until the food reaches the programmed probe temperature.

5. Once the entire cooking sequnce (timed cook and probed cooking) is complete, the unit will switch to the Hold sequence. The display will alternate slowly between

hold and count up time.

If the Hold time parameter `Ht inE` has been set to 0, the unit will count up time indefinitely. The hold sequence will end when you cancel the current menu or activate another menu.

If Hold time `Ht inE` is greater than 0, the unit will run the hold sequence until the hold time expires. It will then switch to the sequence described in 6.

6. When the cook-&-hold cycle is finished, one of the following will happen, depending on the way the controller was programmed at `EtYPE`/ `Sound`:

   With Sound set to 0: The controller automatically switches to idle, in which the controller does not maintain the temperatures at set point and does not run time. `idLE` or current time will appear on the display. The Start/Stop key indicator light will be off.

   With Sound set to 1, 2, or 3: `End` will appear on the display and an audible tone will be emitted. The Start/Stop key indicator light will flash rapidly. You can acknowledge and silence the tone by pressing the Start/Stop key or it will automatically time out within 2 seconds for setting 1 or 20 seconds for settings 2 or 3 and then go into idle. The Start/Stop key indicator light will be off.

   With sound set to 4 or 5: `End` will appear on the display and the Start/Stop key indicator light will flash rapidly. You must acknowledge the audible tone by pressing the Start/Stop key. Once acknowledged the audible tone is silenced and the controller goes into idle. The Start/Stop key indicator light will be off.

7. Once the controller goes into idle, the Start/Stop key indicator light and heat outputs will switch off. The controller will not regulate to any temperature.

8. To repeat cooking, repeat steps 1 through 5 or 6.

Pause a Menu

While cooking, you can pause cooking time by pressing the Start/Stop key once. The Start/Stop key indicator light will flash rapidly. `PAUSE` will appear on the display. Countdown time will resume when you press the active menu key again.

Cancel a Menu

Canceling a menu stops controller completely. The controller does not maintain set point temperatures or run time. You cancel a menu to run another menu, stop menu operation for any reason, or are preparing to shut off the oven.

• Press the Start/Stop key for 2 seconds (in hold, momentarily press the Start/Stop key). Heat outputs will switch off. Heat output indicator lights will switch off. `idLE` or time of day will be on the display. The fan will remain on for the time set in Configuration Mode `EtYPE` / `dELAY`.

Restart a Menu

1. If the controller is preheating or running a menu, cancel the menu by pressing and holding the Start/Stop key for 2 seconds. If the controller is in `idLE`, go to 2.

2. Press the Start/Stop key.

   Based on its programming, the unit will run the menu in one of the ways described earlier.

Change Menus

1. With the controller in idle, select the menu you want to run by performing the procedure under "Select a Menu" earlier in this section.

2. Press the Start/Stop key.

   Based on its programming, the unit will run the menu in one of the ways described earlier.

Door Opening

When you open the oven door (uses Event Output 1 for switch closure. Switch closure indicates the door is open) the unit will act as described below.

During the cooking sequence: time is paused— `door` will appear on the display. The heat and fan output signal will shut off.

During the preheat or hold sequence: `door` will appear on the display. The heat and fan output signal will shut off.

When you close the door the unit will operate normally.

Event Outputs

While running a menu when the Configuration Mode `EtYPE` / `FAn` is set to `2`:
When Low fan speed is on, Event Output 1 is on.
When High fan speed is on, Event Output 2 is on.

While running a menu when the Configuration Mode `EtYPE` / `FAn` is set to `1`:
When the fan is on, Event Output 1 is on.

⚠

WARNING: Starting or initiating a menu can cause or initiate fan motion. Appropriate reasonable care should be taken to prevent personal injury or machine damage as a result of operator initiated or unexpected fan motion.

Temperature Alarms

The controller will alert you to temperature alarm conditions if they occur. If an alarm occurs, take action as determined by your supervisor. See the Appendix in the *Hardware & Software Setup Guide* for a Troubleshooting Chart and a summary of temperature alarms.

Errors

The controller will alert you to errors if they occur. Errors are critical problems that shut down the unit. If an error occurs, an error message will appear on the display. You should switch off the power and call for service.

See the Appendix in the *Hardware & Software Setup Guide* for a Troubleshooting Chart and a summary of errors.

3

Application 3
Automatic Cook-&-Hold Oven

One Heat Channel, Six Menus

Application 3 allows you to program as many as six menu keys, each of which can control one temperature channel, a fan and cooking time for an automatic cook-&-hold oven.

Overview of Key Steps

1. Install the MINICHEF 2000.
2. Wire the controller.
3. Configure the controller.
4. Program the menus.
5. Set the controller security.
6. Set the Real-time Clock.

For instructions on Steps 1, 2, 3, 4, 5 and 6, see the *Hardware & Software Setup Guide*.

7. Design, manufacture and apply faceplate overlay for end-users. (For a suggested design to suit this application, see this section. For overlay dimensions and guidelines, see the *Hardware & Software Setup Guide*.)
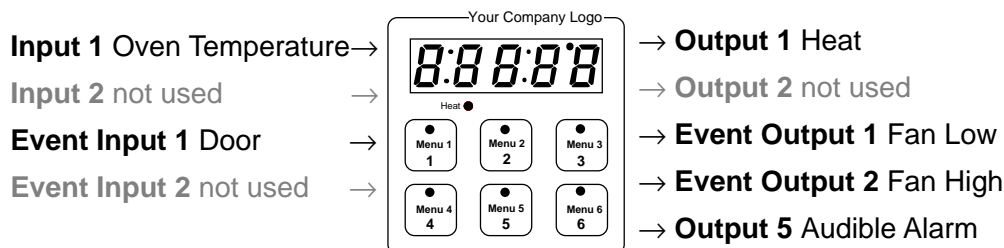
8. Operate the controller. (See this application guide.)

Key Functions in Configuration Mode

MINICHEF 2000

Display five-digit, seven-segment numeric LED display.

Indicator lights (1 for each key, 2 for heat channels).

Edit key (A) Access the next level of parameters or values.

Enter key (B) Enter the value and return to previous level.

Home key (D) Move to Operation Mode with a two-second key press.

G H

A Edit   B Enter   C ▲

D Home   E Escape   F ▼

Up key (C) Move up the lists.

Escape key (E) Return to original value when editing a parameter value.

Down key (F) Move down the lists.

Key Functions in Operation Mode

Your Company Logo

Heat Indicator Light Lit when heat output is on.

Heat ●

Menu 1   Menu 2   Menu 3

Menu 4   Menu 5   Menu 6

Menu Keys Activate and cancel menus, activate cook cycle when preheating, and acknowledge alarms.

Menu Key Indicator Lights
Slow flash.........Preheating
Rapid flash...............Ready
Lit.........................Cooking
Rapid flash.................Done
Slow flash..............Idle and regulating temp to previous set point
Not lit.....No menu selected

Summary of Input/Output Functions

Input 1 Oven Temperature→

Input 2 not used →

Event Input 1 Door →

Event Input 2 not used →

Your Company Logo

Heat ●

Menu 1 / 1   Menu 2 / 2   Menu 3 / 3

Menu 4 / 4   Menu 5 / 5   Menu 6 / 6

→ **Output 1** Heat

→ **Output 2** not used

→ **Event Output 1** Fan Low

→ **Event Output 2** Fan High

→ **Output 5** Audible Alarm

Note: For details, see wiring instructions in the *Hardware & Software Setup Guide.*

Configuration Mode Quick Reference

These are the functions, parameters and values included in the Configuration Mode for this application. You must select Application 3 to access them. For directions, see the *Hardware & Software Setup Guide*. The Appendix of that guide includes an explanation of all parameters and values.

Function	Parameter	Value	Your Settings
`EtYPE` Equipment-Type	`APPL` Application Number	1 - 28	3
	`A_Loc` Application Number Security Lock	No, Yes	
	`Sound` Audible Alarm Sound	0 - 5	
	`FAn` Fan Speed	1 spd, 2 spd	
	`dELAY` Fan Delay Time	0 - 120	
`SEtUP` Setup	`C_F` Temperature Display Format	°C or °F	
	`tiME` Time Display Format	MMM:SS, HH:MM, H:MM:SS	
	`ChirP` Key Chirp	On, Off	
	`Loc` Menu Security Lock	Yes, No	
	`tc` Thermocouple Type	J, K (shown as `H`), E	
	`rtd` RTD Curve	DIN, JIS	
	`tconP` WatCurve™ Temperature Compensation	On, Off	
	`OFSt1` Temp Offset, Channel 1	-99 to 99°F, (-55 to 55°C)	
	`tr Lo` Temperature Range Low	0°F (-18°C) for RTD inputs, 32°F (0°C) for tc inputs to `tr Hi`	
	`tr Hi` Temperature Range High	`tr Lo` to 1200°F (649°C)	
	`rEAdY` Preheat Ready Feature	Yes, No	
	`rbAnd` Ready Band	1 to 1200°F (1 to 649°C)	
	`CLoc` Real Time Clock Display	Yes, No	
	`PLOSS` Power Loss Menu Resume	Yes, No	
	`AL 1` Alarm 1	None, Dev, Proc, Both	
	`AL P1` Absolute Process Alarm 1	100 to 1200°F (38 to 649°C)	
	`ALdL1` Low Deviation Alarm 1	-999 to 0°F (-555 to 0°C)	
	`ALdH1` High Deviation Alarm 1	0 to 999° F (0 to 555°C)	
`tHErL` Thermal	`tYPE` Temperature Control Type	PID, On-Off	
	`HYSt1` Hysteresis 1	1 to 999°F (1 to 555°C)	
	`Pid U` PID Units	SI, US	
	`tunE1` Auto-tuning 1	on, OFF	
	`ProP1` Proportional Band 1	1 to 999°F (1 to 555°C)	
	`rSEt1` Reset (integral) Gain 1	0.00 to 9.99 repeats/minute	
	`int 1` Integral Gain 1	0.00 to 99.99 minutes/repeat	
	`rAtE1` Rate (derivative) Gain 1	0.00 to 9.99 minutes	
	`dEr 1` Derivative Gain 1	0.00 to 9.99 minutes	
	`CYcL1` PID Cycle Time 1	1 to 60 seconds	

`diAg` WatHelp Diagnostics — Used for equipment troubleshooting and testing. Not used when programming. See the *Hardware & Software Setup Guide.*

Program Mode Quick Reference

These are the functions, parameters and values included in the Program Mode for this application. You must select Application 3 to access them. For menu programming directions, see the *Hardware & Software Setup Guide*. The Appendix of that guide includes a detailed explanation of all parameters and values.

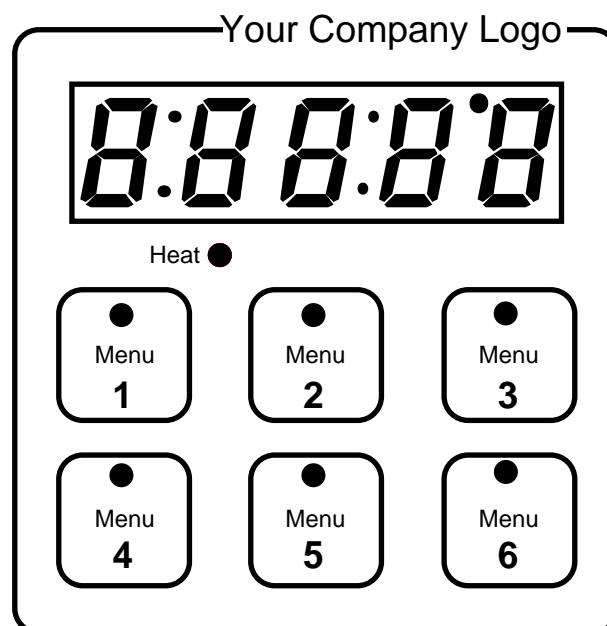| Function	Parameter	Value/Description	Your Settings
`P7` `__` Menu Numbers 1 - 6	`StPt1` Set point 1 Temperature of set point 1.	Temperature range low to temp range high.	
	`tinE1` Time 1 Run time of set point 1.	Setting both Time 1 and Time 2 to 0 invalidates selected menu. Format varies based on configuration.	
	`FAn 1` Fan 1 Speed Speed of fan 1 during time 1	Single Speed: On, Off Two Speed: Off, Low, High	
	`StPt2` Set point 2 Temperature of set point 2.	Temperature range low to temp range high.	
	`tinE2` Time 2 Run time of set point 2.	Setting both Time 1 and Time 2 to 0 invalidates selected menu. Format varies based on configuration.	
	`FAn 2` Fan 2 Speed of fan during time 2	Single Speed: On, Off Two Speed: Off, Low, High	
	`HStPt` Hold Set point Temperature at which the oven will operate during hold sequence	Temp range low. to temp range high	
	`HtinE` Hold Time Run time of hold sequence.	0 = infinite. A setting >0 = hold time. Format varies based on configuration.	
	`H FAn` Hold Fan Speed of fan during hold time.	For 1 speed fans: Off, On For 2 speed fans: Off, Lo, High	

Auto-tuning Note:

Before auto-tuning application 3, Set Point 1 of Menu 1 must first be set to a value that is typical of your application. (See the *Hardware & Software Setup Guide* for information on programming menus.) Then set `tHErL` / `tunE1` to `on`. After you accept `on`, by pressing "Enter," the controller will display `tunE` while auto-tuning is taking place.

The controller will cancel the auto-tuning process if it cannot be completed in 80 minutes. You can cancel the auto-tuning process at any time by pressing either key C or key D and accepting `OFF`, by pressing "Enter," when it appears.
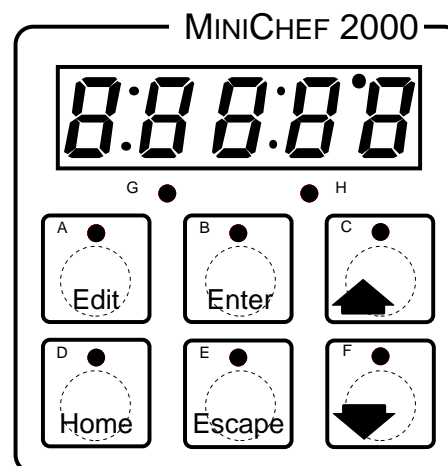
Step 7 Design a Faceplate Overlay

To complete the installation, you must apply a graphic membrane to the front panel of the controller. The following artwork will help you design and create a membrane for this application. For more dimensions and guidelines, see the *Hardware & Software Setup Guide*.

Suggested End-user Overlay:

This Prototyping and Training Membrane Overlay will help you with the configuration and programming steps. To order it, see the Ordering Information at the back of this guide.

Step 8 Operate the Controller

Summary of Key Functions in Operation Mode

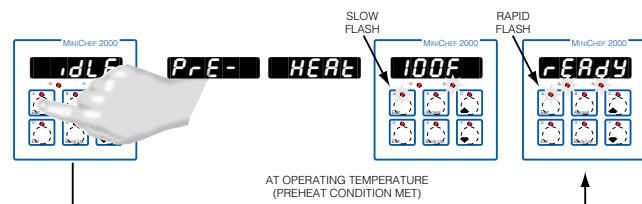| Key	Function
A	Menu 1
B	Menu 2
C	Menu 3
D	Menu 4
E	Menu 5
F	Menu 6

Startup

Apply power to the oven.

`idLE` will appear on the display.

If the Real-time Clock option is installed and **`SEtUP`** / **`tirnE`** is programmed, the time of day will appear on the display.

Preheat

If the **`rEAdy`** parameter under the **`SEtUP`** function in the Configuration Mode is set to **`yES`**, the controller will detect temperatures and preheat to operating temperature (above relative set point minus the ready band).

AT OPERATING TEMPERATURE
(PREHEAT CONDITION MET)

- Press the key for the menu you want to run. Each key selects a different menu. You can select from up to six menus that control temperature and cooking time. Only one menu may be run at a time.

Note: The controller will not respond if you select an invalid menu (the sum of Time 1 and Time 2 is 0).

The menu you have chosen becomes the current menu for controller operation. Until the menu is completed or canceled, the indicator above the menu key will light up (flashing or steady) to indicate the active menu.

- If the oven is not at operating temperature, it will preheat. Meanwhile:

The word **`PrE-`** **`HEAt`** will appear on the display for a few moments. The menu key indicator light will flash slowly. The temperature of Channel 1 will be displayed until the operating temperature is reached.

(The Heat output indicator light — G, just below the display — will light up whenever the controller is calling for heat.)

When the oven is at operating temperature (above the set point minus the ready band) `rEAdy` will appear on the display and the menu key indicator light will flash rapidly. You are now ready to cook with the active menu.
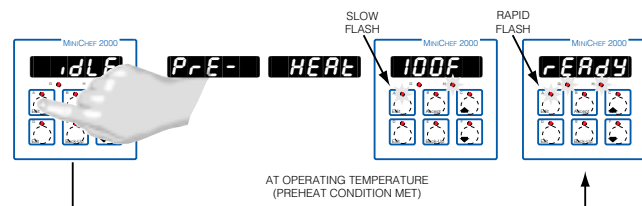
- If the oven is at operating temperature, the display goes directly to `rEAdy` without indicating preheat or temperature.

Note: You can skip preheat and go directly to the cooking sequence by pressing the menu key a second time.

Run a Menu (with preheat feature)

This procedure describes how to run an active menu when the preheat feature is active (when the `rEAdy` parameter in the `SEtUP` function of the Configuration Mode is set to `YES`).
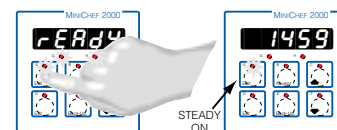
1. With `idLE` or time of day on the display, press the key for the menu you want to run.

If the preheat condition has not been met, the oven will preheat until `rEAdy` appears on the display.

Note: You can skip preheat and go directly to the cooking sequence by pressing the menu key a second time.

If the oven is already at operating temperature, `rEAdy` will appear on the display.

2. With `rEAdy` on the display, place the food in the oven. Then press the active menu key (indicated by the rapidly flashing indicator light).

    The menu key indicator will light up. Time will count down on the display.
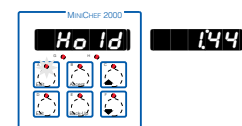
    The unit will run the following two-step cooking sequence:

    Countdown time is displayed. It is the total of the programmed Time 1 plus Time 2.

    Set point 1 and Fan 1 will run until Time 1 expires.

    Set point 2 and Fan 2 will run until Time 2 expires. You will not see the switch-over from Time 1 to Time 2.
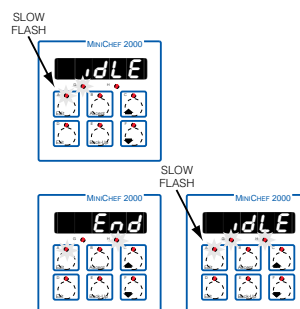
3. Once the cooking sequence is complete, the unit will switch to the Hold sequence. The display will alternate slowly between `Hold` and count up time.

If the Hold time parameter `Ht inE` has been set to 0, the unit will count up time indefinitely. The hold sequence will end and the controller will go into idle when you cancel the current menu by pressing the active menu key.

If `Ht inE` is greater than 0, the unit will run the hold sequence until the hold time expires. It will then switch to the sequence described in 4.

4. When the cooking cycle is finished, one of the following will happen, depending on the way the controller was programmed at `EtYPE` / `Sound`:

With Sound set to 0: The controller automatically switches to idle, in which the controller does not maintain temperature and does not run time. `idLE` or current time will appear on the display. The menu key indicator light will be off.

With Sound set to 1, 2, or 3: `End` will appear on the display and an audible tone will be emitted. The menu key indicator light will flash rapidly. You can acknowledge the tone by pressing the active menu key or it will time out in 1 to 20 seconds and go into idle.
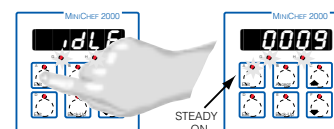
With Sound set to 4 or 5: `End` will appear on the display and the menu key indicator light will flash rapidly. You must acknowledge the audible signal by pressing the active menu key. Once acknowledged the audible signal is silenced and the controller goes into idle.

5. Once the controller goes into idle, the menu key indicator light and the heat outputs will switch off. The controller will not regulate to any temperature.

6. To repeat cooking, repeat steps 1 through 3 or 4.

Run a Menu (without preheat feature)

This procedure describes how to run an active menu when the preheat function is inactive — in other words, when the `rEAdY` parameter in the `SEtUP` function of the Configuration Mode is set to `no`.

1. With idle on the display, place the food in the oven.

2. Press the key for the menu you want to run.

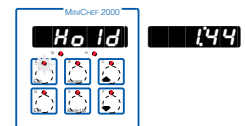   The menu key indicator will light up. Time will count down on the display.

   The unit will run the following two-step cooking sequence:

   Countdown time is displayed. It is the total of the programmed Time 1 plus Time 2.

   Set point 1 and Fan 1 will run until Time 1 expires.

   Set point 2 and Fan 2 will run until Time 2 expires. You will not see the switch-over from Time 1 to Time 2.
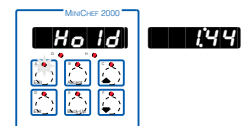
3. Once the entire cooking sequence is complete, the unit will switch to the Hold sequence. The display will alternate slowly between Hold and count up time.

   If the Hold time parameter `Ht inE` has been set to 0, the unit will count up time indefinitely. The hold sequence will end when you cancel the current menu or activate another menu.

   If Hold time `Ht inE` is greater than 0, the unit will run the hold sequence until the hold time expires. It will then switch to the sequence described in 4.

4. When the cook-&-hold cycle is finished, one of the following will happen, depending on the way the controller was programmed at `EtYPE` / `Sound`.

   With Sound set to 0: The controller automatically switches to idle, in which the controller does not maintain temperature and does not run time. `idLE` or current time will appear on the display. The menu key indicator light will be off.

   With Sound set to 1, 2, or 3: `End` will appear on the display and an audible tone will be emitted. The menu key indicator light will flash rapidly. You can acknowledge and silence the tone by pressing the active menu key or it will time out in 1 to 20 seconds and go into idle.

   With Sound set to 4 or 5: `End` will appear on the display and the menu key indicator light will flash rapidly. You must acknowledge the audible signal by pressing the active menu key. Once acknowledged the tone is silenced and the controller goes into idle.

5. Once the controller goes into idle, the menu key indicator light and the heat outputs will switch off. The controller will not regulate to any temperature.

6. To repeat cooking, repeat steps 1 through 3 or 4.

Pause a Menu

While cooking, you can pause cooking time by pressing the active menu key once. The menu key indicator light will flash rapidly. `PAUSE` will appear on the display. Countdown time will resume when you press the active menu key again.

Cancel a Menu

Canceling a menu stops controller operation completely. The controller does not maintain set point temperatures or run time. You cancel a menu to run another menu, stop menu operation for any reason, or are preparing to shut off the oven.

• Press the active menu key for 2 seconds (in hold, momentarily press the menu key). Heat outputs will switch off. Heat output indicator lights will switch off. `idLE` or time of day will be on the display.

Change Menus or Restart

1. If the controller is preheating or running a menu, cancel the menu by pressing and holding the active menu key for 2 seconds. If the controller is in `idLE` go to 2.

2. Press the key for the menu you want to run.
   Based on its programming, the unit will run the menu in one of the ways described earlier.

Door opening

When you open the oven door (uses Event Output 1 for switch closure. Switch closure indicates the door is open) the unit will act as described below.

During the cooking sequence: time is paused — `door` will appear on the display. The heat and fan output signal will shut off.

During the preheat or hold sequence: `door` will appear on the display. The heat and fan output signals will be shut off. When you close the door, the unit will operate normally.

Event Outputs

While running a menu when the Configuration Mode `EtYPE` / `FAn` is set to `2`:
When Low fan speed is on, Event Output 1 is on.
When High fan speed is on, Event Output 2 is on.

While running a menu when the Configuration Mode `EtYPE` / `FAn` is set to `1`: When the fan is on, Event Output 1 is on.

⚠️ **WARNING: Starting or initiating a menu can cause or initiate fan motion. Appropriate reasonable care should be taken to prevent personal injury or machine damage as a result of operator initiated or unexpected fan motion.**

Temperature Alarms

The controller will alert you to temperature alarm conditions if they occur. If an alarm occurs, take action as determined by your supervisor. See the Appendix in the *Hardware & Software Setup Guide* for a Troubleshooting Chart and a summary of Temperature Alarms.

Errors

The controller will alert you to errors if they occur. Errors are critical problems that shut down the unit. If an error occurs, an error message will appear on the display. You should switch off the power and call for service.

See the Appendix in the *Hardware & Software Setup Guide* for a Troubleshooting Chart and a summary of errors.

4

Application 4
Automatic Cook-&-Hold Oven

One Heat Channel, 20 Menus

Application 4 allows you to program as many as twenty menus to control one temperature channel, a fan and cooking time for an automatic cook-&-hold oven.

Overview of Key Steps

1. Install the MINICHEF 2000.
2. Wire the controller.
3. Configure the controller.
4. Program the menus.
5. Set the controller security.
6. Set the Real-time Clock.

For instructions on Steps 1, 2, 3, 4, 5 and 6, see the *Hardware & Software Setup Guide*.

7. Design, manufacture and apply faceplate overlay for end-users. (For a suggested design to suit this application, see this section. For overlay dimensions and guidelines, see the *Hardware & Software Setup Guide*.)
8. Operate the controller. (See this application guide.)

Key Functions in Configuration Mode

MINICHEF 2000

Display five-digit, seven-segment numeric LED display.

Indicator lights (1 for each key, 2 for heat channels).

G ● ● H

Edit key (A) Access the next level of parameters or values.

A ● Edit

B ● Enter

C ● ▲

Up key (C) Move up the lists.

Enter key (B) Enter the value and return to previous level.

Home key (D) Move to Operation Mode with a two-second key press.

D ● Home

E ● Escape

F ● ▼

Escape key (E) Return to original value when editing a parameter value.
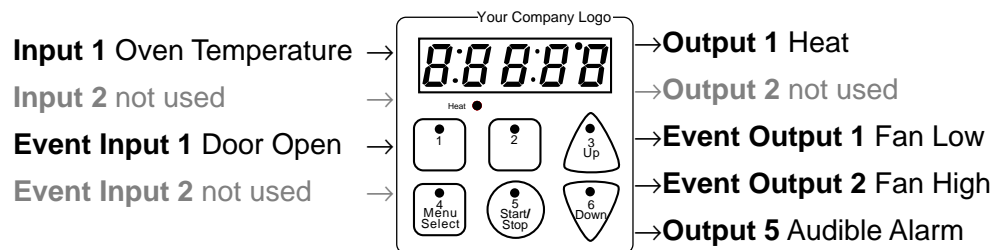
Down key (F) Move down the lists.

Key Functions in Operation Mode

Your Company Logo

Heat indicator light Lit when heat output is on.

Not Used

Heat ●

● 1

● 2

● 3 Up

Increment Scroll through valid menus.

Start/Stop Activate or cancel active menu.

Decrement Scroll through valid menus.

Not Used

● 4 Menu Select

● 5 Start/ Stop

● 6 Down

Menu Select Enter menu mode or select menu.

Start/Stop Indicator Light
Slow flash...Preheating
Rapid flash...Ready
Lit...Cooking
Off...Done

Summary of Input/Output Functions

Input 1 Oven Temperature →

Input 2 not used →

Event Input 1 Door Open →

Event Input 2 not used →

Your Company Logo

Heat ●

1 2 3 Up

4 Menu Select 5 Start/ Stop 6 Down

→**Output 1** Heat

→**Output 2** not used

→**Event Output 1** Fan Low

→**Event Output 2** Fan High

→**Output 5** Audible Alarm

Note: For details, see wiring instructions in the *Hardware & Software Setup Guide.*

Configuration Mode Quick Reference

These are the functions, parameters and values included in the Configuration Mode for this application. You must select Application 4 to access them. For directions, see the *Hardware & Software Setup Guide*. The Appendix of that guide includes an explanation of all parameters and values.

Function	Parameter	Value	Your Settings
`EtYPE` Equipment-Type	`APPL` Application Number	1 - 28	4
	`A_Loc` Application Number Security Lock	yes, no	
	`Sound` Audible Alarm Sound	0 - 5	
	`FAn` Fan Speed	1 spd, 2 spd	
	`dELAY` Fan Delay Time	0 - 120	
`SEtUP` Setup	`T_F` Temperature Display Format	°C or °F	
	`tiME` Time Display Format	MMM:SS, HH:MM, H:MM:SS	
	`ChirP` Key Chirp	On, Off	
	`Loc` Menu Security Lock	Yes, No	
	`tc` Thermocouple Type	J, K (shown as `H`), E	
	`rtd` RTD Curve	DIN, JIS	
	`tconP` WatCurve™ Temperature Compensation	On, Off	
	`OFSt1` Temp. Offset, Channel 1	-99 to 99°F,(-55 to 55°C)	
	`tr Lo` Temperature Range Low	0°F (-18°C) for RTD inputs, 32°F (0°C) for tc inputs to `tr Hi`	
	`tr Hi` Temperature Range High	`tr Lo` to 1200°F (649°C)	
	`rEAdY` Preheat Ready Feature	Yes, No	
	`rbAnd` Ready Band	1 to 1200°F (1 to 649°C)	
	`CLoc` Real Time Clock Display	Yes, No	
	`PLOSS` Power Loss Menu Resume	Yes, No	
	`AL 1` Alarm 1	None, Dev, Proc, Both	
	`AL P1` Absolute Process Alarm 1	100 to 1200°F (38 to 649°C)	
	`ALdL1` Low Deviation Alarm 1	-999° to 0°F (-555 to 0°C)	
	`ALdH1` High Deviation Alarm 1	0 to 999°F (0 to 555°C)	
`tHErL` Thermal	`tYPE` Temperature Control Type	Pid, On-Off	
	`HYSt1` Hysteresis 1	1 to 99°F (1 to 55°C)	
	`Pid U` PID Units	SI, US	
	`tunE1` Auto-tuning 1	on, OFF	
	`ProP1` Proportional Band 1	1 to 999°F (1 to 555°C)	
	`rSEt1` Reset (integral) Gain 1	0.00 to 9.99 repeats/minute	
	`int 1` Integral Gain 1	0.00 to 99.99 minutes/repeat	
	`rAtE1` Rate (derivative) Gain 1	0.00 to 9.99 minutes	
	`dEr 1` Derivative Gain 1	0.00 to 9.99 minutes	
	`CYcL1` PID Cycle Time 1	1 to 60 seconds	
`diAg` WatHelp Diagnostics	Used for equipment troubleshooting and testing. Not used when programming. See the *Hardware & Software Setup Guide*.		

Program Mode Quick Reference

These are the functions, parameters and values included in the Program Mode for this application. You must select Application 4 to access them. For menu programming directions, see the *Hardware & Software Setup Guide*. The Appendix of that guide includes a detailed explanation of all parameters and values.

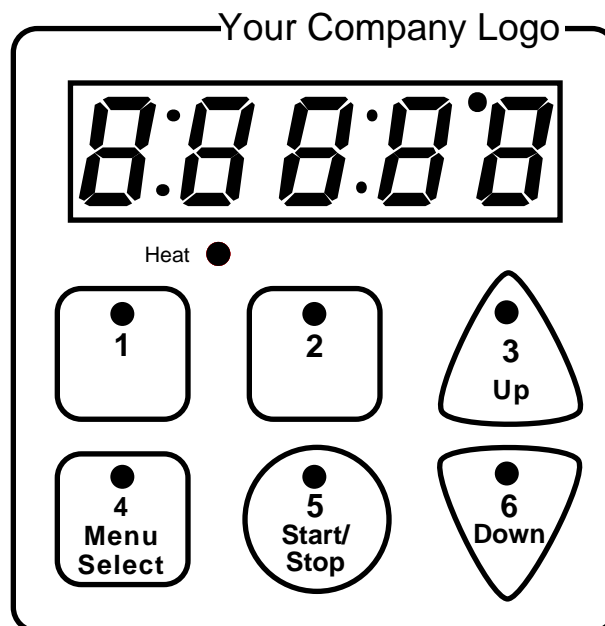| Function	Parameter	Value/Description	Your Settings
`P9__` Menu Numbers 1 - 20	`StPt1` Set point 1 Temperature of set point 1.	Temperature range low to range high.	
	`tInE1` Time 1 Run time of set point 1.	Setting both Time 1 and Time 2 at 0 invalidates selected menu. Format varies based on configuration.	
	`FAn 1` Fan 1 Speed Speed of fan during time 1.	Single Speed: On, Off Two Speed: Off, Low, High	
	`StPt2` Set point 2 Temperature of set point 2.	Temperature range low to range high.	
	`tInE2` Time 2 Run time of set point 2.	Setting both Time 1 and Time 2 to 0 invalidates selected menu. Format varies based on configuration.	
	`FAn 2` Fan 2 Speed of fan during time 2.	Single Speed: On, Off Two Speed: Off, Low, High	
	`HStPt` Hold Set point Temperature at which the oven will operate during hold sequence.	Range low to range high.	
	`HtInE` Hold Time Run time of hold sequence.	0 = infinite. A setting >0 = hold time. Format varies based on configuration.	
	`H FAn` Hold Fan Speed of fan during hold time.	Single Speed: On, Off Two speed: Off, Low, High	

Auto-tuning Note:

Before auto-tuning Application 4, Set Point 1 of Menu 1 must first be set to a value that is typical of your application. (See the *Hardware & Software Setup Guide* for information on programming menus.) Then set `tHErL` / `tunE1` to `on`. After you accept `on`, the controller will display `tunE` while auto-tuning is taking place.

The controller will cancel the auto-tuning process if it cannot be completed in 80 minutes. You can cancel the auto-tuning process at any time by pressing either key C or key D and accepting `OFF`, by pressing "Enter," when it appears.
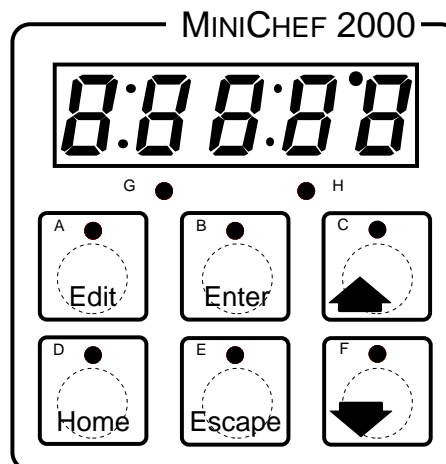
Step 7 Design a Faceplate Overlay

To complete the installation, you must apply a graphic membrane to the front panel of the controller. The following artwork will help you design and create a membrane for this application. For more dimensions and guidelines, see the *Hardware & Software Setup Guide*.

Suggested End-user Overlay:

This Prototyping and Training Membrane Overlay will help you with the configuration and programming steps. To order it, see the Ordering Information at the back of this guide.

Step 8 Operate the Controller

Summary of Key Functions in Operation Mode

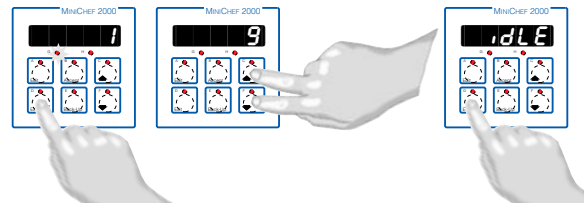| Key	Function
A	None
B	None
C	Menu Increment
D	Menu Select
E	Start/Stop
F	Menu Decrement

Start-up

Apply power to the oven.

`idLE` will appear on the display.

If the Real-time Clock option is installed and **`SEtUP`** / **`tInE`** is programmed, the time of day will appear on the display.

Select a Menu

1. Press the Menu Select Key

The controller will display the currently selected menu. If no menus have been pro-grammed the word **`nonE`** will appear on the display.

2. Press the Up or Down key until the menu you want appears on the display.

• The controller will only display valid menus (those for which the total of Time 1 and Time 2 for the menu is set to greater than 0).

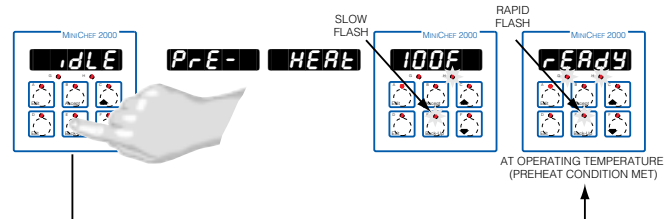3. Press the Menu Select key again or press the Start key to immediately run the menu.

The menu you have chosen becomes the current menu for controller operation.

Preheat

If the `rEAdY` parameter under the `SEtUP` function in the Configuration Mode is set to yes, the controller will detect temperatures and preheat to operating temperature (above the relative set point minus the ready band) as required.

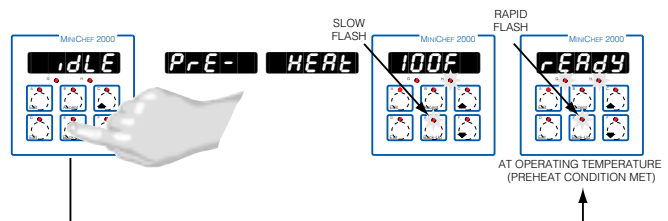- Activate the menu by pressing the Start/Stop key.

- If the oven is not at operating temperature, it will preheat. Meanwhile:

  The word `PrE-` `HEAt` will appear on the display for a few moments. The Start/Stop key indicator light will flash slowly. The temperature of Channel 1 will be displayed until the operating temperature is reached.

  The heat output indicator light G, just below the display, will light up whenever the controller is calling for heat.

  When the oven is at operating temperature (above the relative set point minus the ready band) `rEAdY` will appear on the display and the Start/Stop key indicator light will flash rapidly. You are now ready to cook with the active menu.

- If the oven is at operating temperature, the display goes directly to `rEAdY` without indicating preheat or temperature.

Note: you can skip preheat and go directly to the cooking sequence by pressing the Start/Stop key a second time.

Run a Menu (with preheat feature)

This procedure describes how to run an active menu when the preheat feature is active that is, when the `rEAdY` parameter in the `SEtUP` function of the Configuration mode is set to `YES`.

1. Select a menu as shown earlier.

2. With `idLE` or time of day on the display, press the Start/Stop key.

   If the preheat condition has not been met, the oven will preheat until ready appears on the display.

Note: you can skip preheat and go directly to the cooking sequence by pressing the Start/Stop key a second time.

If the oven is already at operating temperature `rEAdY` will appear on the display.

3. With `rEAdy` on the display, place the food in the oven. Then press the Start/Stop key (indicated by the rapidly flashing indicator light).

   The Start/Stop key indicator will light up. Time will count down on the display.

   The unit will run the following two-step cooking sequence:

   Countdown time is displayed. It is the total of the programmed Time 1 plus Time 2.

   Set point 1 and Fan 1 will run until Time 1 expires.

   Set point 2 and Fan 2 will run until Time 2 expires. You will not see the switch-over from Time 1 to Time 2.

4. Once the cooking sequence is complete, the unit will switch to the `Hold` sequence.

   The display will alternate slowly between Hold and count up time.

   If the Hold time parameter `Ht inE` has been set to 0, the unit will count up time indefinitely. The hold sequence will end and the controller will go into idle when you cancel the current menu by pressing the Start/Stop key.

   If `Ht inE` is greater than 0, the unit will run the hold sequence until the hold time expires. It will then switch to the sequence described in 5.

5. When the cooking cycle is finished, one of the following will happen, depending on the way the controller was programmed at `EtYPE` / `Sound` :

   With Sound set to 0, the controller automatically switches to idle in which the controller does not maintain temperature and does not run time. `idLE` or current time will appear on the display. The Start/Stop key indicator light will be off.

   With Sound set to 1, 2, or 3, `End` will appear on the display and an audible tone will be emitted. The Start/Stop key indicator light will flash rapidly. You can acknowledge the tone by pressing the Start/Stop key or it will time out in 1 to 20 seconds and go into idle. The Start/Stop key indicator light will be off.

   With Sound set to 4 or 5, `End` will appear on the display and the Start/Stop key indicator light will flash rapidly. You must acknowledge the audible signal by pressing the Start/Stop key. Once acknowledged the audible signal is silenced and the controller goes into idle. The Start/Stop key indicator light wil be off.

6. Once the controller goes into idle, the Start/Stop key indicator light and the heat outputs will switch off. The controller will not regulate to any temperature.

7. To repeat cooking, repeat steps 1 through 4 or 5.

Run a Menu (without preheat feature)

This procedure describes how to run an active menu when the preheat feature is inactive in other words, when the `rEAdy` parameter in the `SEtUP` function of the Configuration mode is set to `no`.

1. Select a menu as shown earlier.

2. With idle on the display, place the food in the oven.

3. Press the Start/Stop key.

   The Start/Stop key indicator will light up. Time will count down on the display.

   The unit will run the following two-step cooking sequence:

   Countdown time is the total of the programmed Time 1 plus Time 2.

Setpoint 1 and Fan 1 will run until Time 1 expires.

Setpoint 2 and Fan 2 will run until Time 2 expires. You will not see the switch-over from Time 1 to Time 2.

4. Once the cooking sequence is complete, the unit will switch to the Hold sequence.

The display will alternate slowly between **Ho ld** and count up time.

If the Hold time parameter **Ht inE** has been set to 0, the unit will count up time indefinitely. The hold sequence will end and the controller will go into idle when you cancel the current menu by pressing the Start/Stop key.

If **Ht inE** is greater than 0, the unit will run the hold sequence until the hold time expires. It will then switch to the sequence described in 5.

5. When the cooking cycle is finished, one of the following will happen, depending on the way the controller was programmed at **EtYPE** / **Sound** :

With Sound set to 0, the controller automatically switches to idle in which the controller does not maintain temperature and does not run time. idle or current time will appear on the display. The Start/Stop key indicator light will be off.

With Sound set to 1, 2, or 3, **End** will appear on the display and an audible tone will be emitted. The Start/Stop key indicator light will flash rapidly. You can acknowledge the tone by pressing the Start/Stop key or it will time out in 1 to 20 seconds and go into idle. The Start/Stop key indicator light will flash slowly.

With Sound set to 4 or 5, **End** will appear on the display and the Start/Stop key indicator light will flash rapidly. You must acknowledge the audible signal by pressing the Start/Stop key. Once acknowledged the audible signal is silenced and the controller goes into idle. The Start/Stop key indicator light will flash slowly.

6. Once the controller goes into idle, the Start/Stop key indicator light and the heat outputs will switch off. The controller will not regulate to any temperature.

7. To repeat cooking, repeat steps 1 through 4 or 5.

Pause a Menu

While cooking, you can pause cooking time by pressing the Start/Stop key once. The Start/Stop key indicator light will flash rapidly. **PAUSE** will appear on the display. Countdown time will resume when you press the active menu key again.

Cancel a menu

Canceling a menu stops the controller completely. The controller does not maintain set point temperatures or run time. You cancel a menu to run another menu, stop menu operation for any reason, or are preparing to shut off the oven.

• Press the Start/Stop key for 2 seconds (in hold, momentarily press the Start/Stop key). Heat outputs will switch off. Heat output indicator lights will switch off. **idLE** or time of day will be on the display.

Change Menus or Restart

With the controller in idle:

1. Select a menu as shown earlier.

2. Press the Start/Stop key.

Door Opening

When you open the oven door (uses Event Output 1 for switch closure. Switch closure indicates the door is open) the unit will act as described below.

During the cooking sequence: time is paused and `door` will appear on the display. The heat and fan output signal will shut off.

During the preheat or hold sequence: `door` will appear on the display. The heat and fan output signals will be shut off. When you close the door the unit will operate normally.

Event Outputs

While running a menu when the Configuration Mode `EtYPE` / `FAn` is set to `2`:
When Low fan speed is on, Event Output 1 is on.
When High fan speed is on, Event Output 2 is on.

While running a menu when the Configuration Mode `EtYPE` / `FAn` is set to `1`: When the fan is on, Event Output 1 is on.

⚠

WARNING: Starting or initiating a menu can cause or initiate fan motion. Appropriate reasonable care should be taken to prevent personal injury or machine damage as a result of operator initiated or unexpected fan motion.

Temperature Alarms

The controller will alert you to temperature alarm conditions if they occur. If an alarm occurs, take action as determined by your supervisor. See the Appendix in the *Hardware & Software Setup Guide* for a Troubleshooting Chart and a summary of temperature alarms.

Errors

The controller will alert you to errors if they occur. Errors are critical problems that shut down the unit. If an error occurs, an error message will appear on the display. You should switch off the power and call for service.

See the Appendix in the *Hardware & Software Setup Guide* for a Troubleshooting Chart and a summary of errors.

5

Application 5
Manual Cook-&-Hold Oven with Meat Probe Option

One Heat Channel

Application 5 allows the manual setting of a single menu to control a temperature channel, and cooking time for a manual cook-&-hold oven with a meat probe. This application can include a one or two step cooking sequence and a hold function.

Overview of Key Steps

1. Install the MINICHEF 2000.
2. Wire the controller.
3. Configure the controller.
4. Program the menu.
5. Set the controller security.
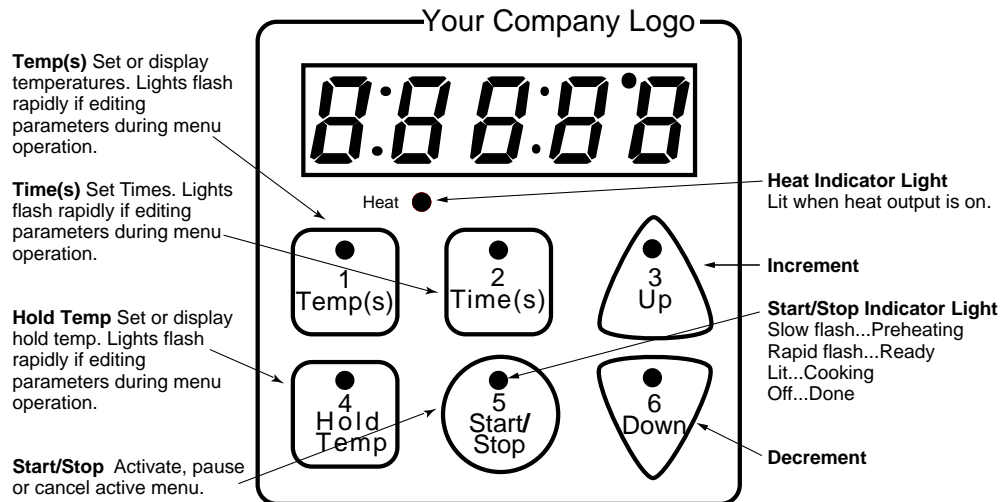6. Set the Real-time Clock.

For instructions on Steps 1, 2, 3, 4, 5 and 6, see the *Hardware & Software Setup Guide*.

7. Design, manufacture and apply faceplate overlay for end-users. (For a suggested design to suit this application, see this section. For overlay dimensions and guidelines, see the *Hardware & Software Setup Guide*.)
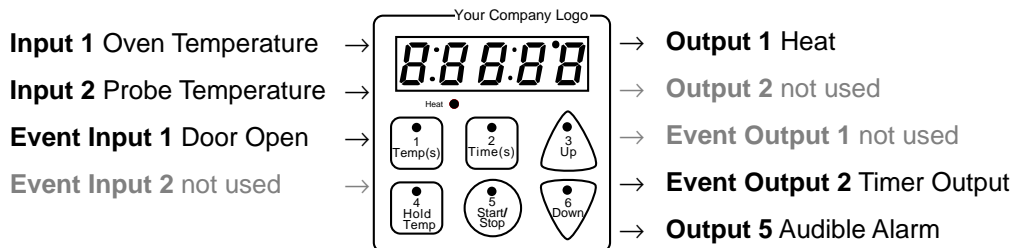8. Operate the controller. (See this application guide.)

Key Functions in Configuration Mode

MINICHEF 2000

Display five-digit, seven-segment numeric LED display.

Indicator lights (1 for each key, 2 for heat channels).

G   H

Edit key (A) Access the next level of parameters or values.

A Edit

Enter key (B) Enter the value and return to previous level.

B Enter

C (Up key)

Home key (D) Move to Operation Mode with a two-second key press.

D Home   E Escape   F (Down key)

Up key (C) Move up the lists.

Escape key (E) Return to original value when editing a parameter value.

Down key (F) Move down the lists.

Key Functions in Operation Mode

Your Company Logo

Temp(s) Set or display temperatures. Lights flash rapidly if editing parameters during menu operation.

Time(s) Set Times. Lights flash rapidly if editing parameters during menu operation.

Heat

1 Temp(s)   2 Time(s)   3 Up

Hold Temp Set or display hold temp. Lights flash rapidly if editing parameters during menu operation.

4 Hold Temp   5 Start/Stop   6 Down

Start/Stop Activate, pause or cancel active menu.

Heat Indicator Light Lit when heat output is on.

Increment

Start/Stop Indicator Light
Slow flash...Preheating
Rapid flash...Ready
Lit...Cooking
Off...Done

Decrement

Summary of Input/Output Functions

Input 1 Oven Temperature →

Input 2 Probe Temperature →

Event Input 1 Door Open →

Event Input 2 not used →

Your Company Logo

Heat

1 Temp(s)   2 Time(s)   3 Up

4 Hold Temp   5 Start/Stop   6 Down

→ **Output 1** Heat

→ **Output 2** not used

→ **Event Output 1** not used

→ **Event Output 2** Timer Output

→ **Output 5** Audible Alarm

Note: For details, see wiring instructions in the *Hardware & Software Setup Guide.*

Configuration Mode Quick Reference

These are the functions, parameters and values included in the Configuration Mode for this application. You must select Application 5 to access them. For directions, see the *Hardware & Software Setup Guide*. The Appendix of that guide includes an explanation of all parameters and values.

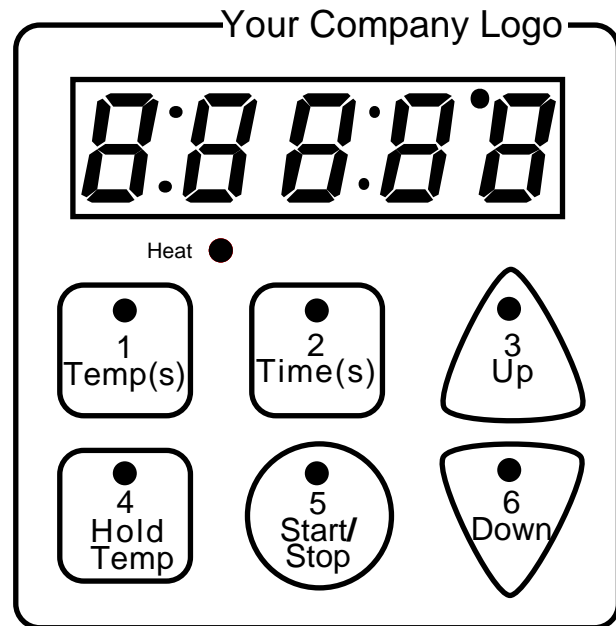| Function	Parameter	Value	Your Settings
EtYPE Equipment-Type	**APPL** Application Number	1 - 28	5
	A_Loc Application Number Security Lock	Yes, No	
	t OUt Timer Output 4	Yes, No	
	StEPS Number of Cooking Steps	1, 2	
SEtUP Setup	**°C_F** Temperature Display Format	ºC or ºF	
	tIME Time Display Format	MMM:SS, HH:MM, H:MM:SS	
	ChIrP Key Chirp	On, Off	
	tc Thermocouple Type	J, K (shown as **H**), E	
	rtd RTD Curve	DIN, JIS	
	tconP Temperature Compensation	On, Off	
	OFSt1 Temperature Offset,Channel 1	-99 to 99ºF (-55 to 55ºC)	
	OFSt2 Temperature Offset,Channel 2	-99 to 99ºF (-55 to 55ºC)	
	tr Lo Temperature Range Low	0ºF (-18º C) for RTD inputs 32ºF (0ºC) for tc inputs to **tr Hi**	
	tr Hi Temperature Range High	**tr Lo** to 1200°F (649°C)	
	rEAdY Preheat Ready Feature	Yes, No	
	rbAnd Ready Band	1 to 1200ºF (649ºC)	
	CLoc Real Time Clock	Yes, No	
	PLOSS Menu Resume	Yes, No	
	AL 1 Alarm for Channel 1	None, Dev, Proc, Both	
	AL P1 Absolute Process Alarm 1	10 to 1200ºF (38 to 649ºC)	
	ALdL1 Low Deviation Alarm 1	-999 to 0ºF (-555 to 0ºC)	
	ALdH1 High Deviation Alarm 1	0 to 999ºF (0 to 555ºC)	
	AL 2 Alarm for Channel 2	None, Dev, Proc, Both	
	AL P2 Absolute Process Alarm 2	100 to 1200ºF (38 to 649ºC)	
	ALdL2 Low Deviation Alarm 2	-999 to 0ºF (-555 to 0ºC)	
	ALdH2 High Deviation Alarm 2	0 to 999ºF (0 to 555ºC)	
tHErL Thermal	**tYPE** Type of Temperature Control	Pid, On-Off	
	HYSt1 Hysteresis 1	1 to 99ºF (1 to 55ºC)	
	Pid U PID Units	SI, US	
	tunE1 Auto-tuning 1	On, Off	
	ProP1 Proportional Band 1	1 to 999ºF (1 to 555ºC)	
	rSEt1 Reset (integral) Gain 1	0.00 to 9.99 repeats/minute	
	int 1 Integral Gain 1	0.00 to 99.99 minutes/repeat	
	rAtE1 Rate (derivative) Gain 1	0.00 to 9.99 minutes	
	dEr 1 Derivative Gain 1	0.00 to 9.99 minutes	
	CYcL1 PID Cycle Time 1	1 to 60 seconds	
dIAg WatHelp Diagnostics	Used for equipment troubleshooting and testing. Not used when programming. See the *Hardware & Software Setup Guide.*		

Auto-tuning Note:

Before auto-tuning Application 5, `tEMP1` in the operations menu must first be set to a value that is typical of your application. (See the *Hardware & Software Setup Guide* for information) Then set `tHErL` / `tunE1` to `on`. After you accept `on`, by pressing "Enter," the controller will display `tunE` while auto-tuning is taking place.

The controller will cancel the auto-tuning process if it cannot be completed in 80 minutes. You can cancel the auto-tuning process at any time by pressing either key C or key D and accepting `OFF`, by pressing "Enter," when it appears.

Step 7 Design a Faceplate Overlay

To complete the installation, you must apply a graphic membrane to the front panel of the controller. The following artwork will help you design and create a membrane for this application. For more dimensions and guidelines, see the *Hardware & Software Setup Guide*.

Suggested End-user Overlay:

Your Company Logo

Heat

1 Temp(s)   2 Time(s)   3 Up

4 Hold Temp   5 Start/ Stop   6 Down

This Prototyping and Training Membrane Overlay will help you with the configuration and programming steps. To order it, see the Ordering Information at the back of this guide.

MINICHEF 2000

G   H

A Edit   B Enter   C

D Home   E Escape   F

Step 8 Operate the Controller

Summary of Key Functions in Operation Mode

Key	Operation Function
A	Cook Temp(s)
B	Cook Time(s)
C	Up (Increment)
D	Hold Temp
E	Start/Stop
F	Down (Decrement)

Start-up

Apply power to the oven.

idLE will appear on the display.

If the Real Time Clock option is installed and **SEtuP** / **CLoc** = **YES**, the time of day will appear on the display.

Set the Menu

Depending on the way the controller was programmed at **EtYPE** / **StEPS** you can set the menu to run in one step or two.

EtYPE / **StEPS** = **1**: Single Step Menu

EtYPE / **StEPS** = **2**: Two Step Menu

Single Step Menu

The single step menu consists of one cooking temperature, one probe temperature, one cooking time and one hold temperature.

Set the cooking and probe temperatures

1. Press the Cook Temp key.

   tEMP 1 and then the cooking temperature value will appear on the display.

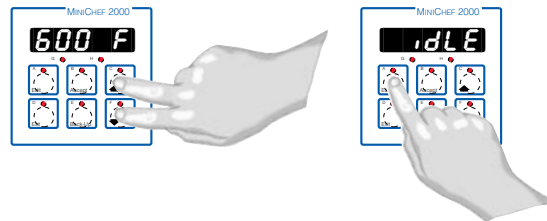2. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

3. Press the Cook Temp key again.

   The cooking temperature has been set.

   PtEMP and then the probe temperature value will appear on the display.

4. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

5. Press the Cook Temp key again.

   The probe temperature has been set.

   ⬛idLE will appear on the display.

Set the cooking time:

1. Press the Cook Time key.

   tinE 1 and then the cooking time value will appear on the display.

2. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

3. Press the Cook Time key again.

   The Cooking Time has been set

   ⬛idLE will appear on the display.

Set the Hold Temperature

1. Press the Hold Temp key.

   HtEnP and then the hold temperature value will appear on the display.

2. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

3. Press the Hold Temp key again.

   ⬛idLE will appear on the display.

   The menu you have set becomes the current menu for controller operation.

Five Second Timeout

When using the up or down keys to change a value, if you do not press any key for 5 seconds, the controller will automatically be set to the last value on the display and return to **⬛idLE**.

Two Step Menu

The two step menu consists of two cooking temperatures, one probe temperature, two cooking times and one hold temperature.

Set the two cooking temperatures and one probe temperature

1. Press the Cook Temp key.

   tEnP 1 and then the first cooking temperature value will appear on the display.

2. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

3. Press the Cook Temp key again.

   The first cooking temperature has been set.

   `tEMP2` and then the second cooking temperature value will appear on the display.

4. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

5. Press the Cook Temp key again.

   The second cooking temperature has been set.

   `PtEMP` and then the probe temperature value will appear on the display.

6. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

7. Press the Cook Temp key again.

   The probe temperature has been set.

   `idLE` will appear on the display.

Set the two cooking times

1. Press the Cook Time key.

   `t iME 1` and then the first cooking time value will appear on the display.

2. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

3. Press the Cook Time key again.

   The first cooking time has been set.

   `t iME2` and then the second cooking time value will appear on the display.

4. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

5. Press the Cook Time key again.

   The second cooking time has been set.

   `idLE` will appear on the display.
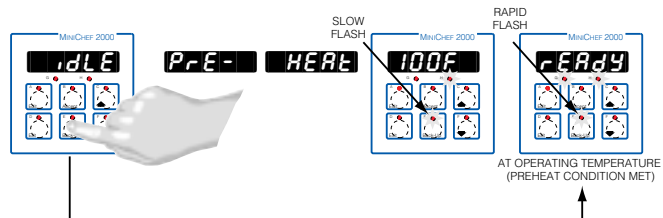
Set the Hold Temperature

1. Press the Hold Temp key.

   `HtEMP` and then the hold temperature value will appear on the display.

2. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

3. Press the Hold Temp key again.

   The Hold temperature has been set.

   `idLE` will appear on the display.

   The menu you have set becomes the current menu for controller operation.

Five Second Timeout

When using the up or down keys to change a value, if you do not press any key for 5 seconds, the controller will automatically be set to the last value on the display and return to **idLE**.

Preheat

If the **rEAdY** parameter under the **SEtUP** function in the Configuration Mode is set to yes, when you press the Start/Stop key to activate the menu, the controller will detect temperatures and preheat to operating temperature (above relative set point minus the ready band) as required.

If the oven is not at operating temperature, it will preheat. Meanwhile:

- The word **PrE- HEAt** will appear on the display for a few moments. The Start/Stop key indicator light will flash slowly. The temperature of Channel 1 will be displayed until the operating temperature is reached.

- The heat output indicator light - G, just below the display- will light up whenever the controller is calling for heat.

   When the oven is at operating temperature (above the relative set point minus the ready band) **rEAdY** will appear on the display and the Start/Stop key indicator light will flash rapidly. You are now ready to cook with the active menu.
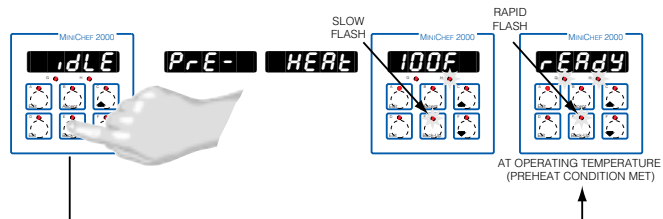
   If the oven is at operating temperature, the display goes directly to **rEAdY** without indicating preheat or temperature.

Note: You can skip preheat and go directly to the cooking sequence by pressing the Start/Stop key a second time.

Run a Menu (with preheat feature)

This procedure describes how to run an active menu when the preheat feature is active (when the **rEAdY** parameter in the **SEtUP** function of the Configuration mode is set to **YES**).

1. Set the menu as shown earlier.

2. With **idLE** or time of day on the display, press the Start/Stop key.

If the preheat condition has not been met, the oven will preheat until `rEAdy` appears on the display.

Note: You can skip preheat and go directly to the cooking sequence by pressing the Start/Stop key a second time.

If the oven is already at operating temperature `rEAdy` will appear on the display.

3. With `rEAdy` on the display, place the food in the oven and insert the meat probe. Then press the Start/Stop key (indicated by the rapidly flashing indicator light).

    The Start/Stop key indicator will light up. Time will count down on the display.

    Depending on the way the controller was programmed at `EtYPE` / `StEPS` the menu will run in one step or two.

    One Step

    Countdown time is displayed.

    Set point 1 will run until time expires.

    Two Step

    Countdown time is displayed. It is the total of the programmed Time 1 plus Time 2.

    Set point 1 will run until Time 1 expires.

    Set point 2 will run until Time 2 expires. You will not see the switch-over from Time 1 to Time 2.

4. When the cooking sequence is complete, the oven will run the probe sequence.

    `ProbE` will appear on the display.

    The unit will continue to cook until the food reaches the programmed probe temperature.

5. Once the cooking sequence and probe sequence are complete, the unit will switch to the Hold sequence.

    An audible tone will sound for two seconds.

    The display will alternate slowly between `Hold` and count up time.

    The unit will count up time indefinitely. The hold sequence will end and the controller will go into idle when you cancel the current menu by pressing the Start/Stop key.

6. Once the controller goes into idle, the Start/Stop key indicator light will switch off.

7. To repeat cooking, repeat steps 1 through 5.

Run a Menu (with no preheat feature)

This procedure describes how to run an active menu when the preheat feature is inactive (when the `rEAdy` parameter in the `SEtUP` function of the Configuration mode is set to `no`).

1. Select the menu you want to run as shown earlier.

2. With idle on the display, place the food in the oven and insert the meat probe.

3. Press the Start/Stop key.

    The Start/Stop key indicator will light up. Time will count down on the display.

Depending on the way the controller was programmed at `EtYPE` / `StEPS` the menu will run in one step or two.

One Step

Countdown time is displayed.

Set point 1 will run until time expires.

Two Step

Countdown time is displayed. It is the total of the programmed Time 1 plus Time 2.

Set point 1 will run until Time 1 expires.

Set point 2 will run until Time 2 expires. You will not see the switch-over from Time 1 to Time 2.

4. When the timed cooking sequence is complete, the oven will run the probe sequence. `ProbE` will appear on the display.

   The unit will continue to cook until the food reaches the programmed probe temperature.

5. Once the cooking sequence and probe sequence are complete, the unit will switch to the Hold sequence.

   An audible tone will sound for two seconds.

   The display will alternate slowly between `Hold` and count up time.

   The unit will count up time indefinitely. The hold sequence will end and the controller will go into idle when you cancel the current menu by pressing the Start/Stop key.

6. Once the controller goes into idle, the Start/Stop key indicator light will switch off.

7. To repeat cooking, repeat steps 1 through 5.

View Actual Oven Temperature

You can view the actual oven temperature by pressing and holding the Cook Temp key for three seconds.

Adjust a Menu While Cooking

You can adjust the temperature and time settings during the cooking and hold sequences by performing the actions shown under "Set the Menu" earlier in this section.

Changes can be made to temperature and time only during the portion of the cooking sequence in which they are active. For example: a change to the first cooking temperature `tEMP 1` can be made only when the first cooking temperature is being run during the cooking sequence.

Temperature changes made while cooking are saved and become part of the permanent menu. Time changes are not saved and do not become part of the permanent menu.

Pause a Menu

While cooking, you can pause cooking time by pressing the Start/Stop key once. The Start/Stop key indicator light will flash rapidly and `PAUSE` will appear on the display. Countdown time will resume when you press the active menu key again.

Cancel a Menu

Canceling a menu stops the controller completely. The controller does not maintain set point temperatures or run time. You cancel a menu to change the menu, stop menu operation for any reason, or are preparing to shut off the oven.

Press the Start/Stop key for 2 seconds (in hold, momentarily press the Start/Stop key). Heat outputs will switch off. Heat output indicator lights will switch off. `idLE` or time of day will be on the display.

Restart a Menu

1. If the controller is preheating or running a menu, cancel the menu by pressing and holding the Start/Stop key for 2 seconds. If the controller is in `idLE`, go to 2.

2. Press the Start/Stop key.
   Based on its programming, the unit will run the menu in one of the ways described earlier.

Change Menus

1. If the controller is preheating or running a menu, cancel the menu by pressing and holding the Start/Stop key for 2 seconds.

2. With the controller in idle, set the menu you want to run by performing the procedure under "Set the Menu" earlier in this section.

3. Press the Start/Stop key.
   Based on its programming, the unit will run the menu in one of the ways described earlier.

Door Opening

When you open the oven door (uses Event Output 1 for switch closure. Switch closure indicates the door is open) the unit will act as described below.

During the cooking sequence: time is paused and `door` will appear on the display. The heat will shut off.

During the preheat or hold sequence: `door` will appear on the display. The heat will shut off. When you close the door the unit will operate normally.

Event Outputs

If `EtYPE` / `t OUt` in the Configuration Mode is set to `YES`, when time is counting down Event Output 2 is on. It is off during `PAuSE`, `idLE` or `HoLd`.

Temperature Alarms

The controller will alert you to temperature alarm conditions if they occur. If an alarm occurs, take action as determined by your supervisor. See the Appendix in the *Hardware & Software Setup Guide* for a Troubleshooting Chart and a summary of temperature alarms.

Errors

The controller will alert you to errors if they occur. Errors are critical problems that shut down the unit. If an error occurs, an error message will appear on the display. You should switch off the power and call for service.

See the Appendix in the *Hardware & Software Setup Guide* for a Troubleshooting Chart and a summary of errors.

6

Application 6
Manual Cook & Hold Oven

Application 6 allows the manual setting of a single menu to control a temperature channel, and cooking time for a manual cook-&-hold oven. This application can include a one or two step cooking sequence and a hold function.

Overview of Key Steps

1. Install the MINICHEF 2000.
2. Wire the controller.
3. Configure the controller.
4. Program the menu.
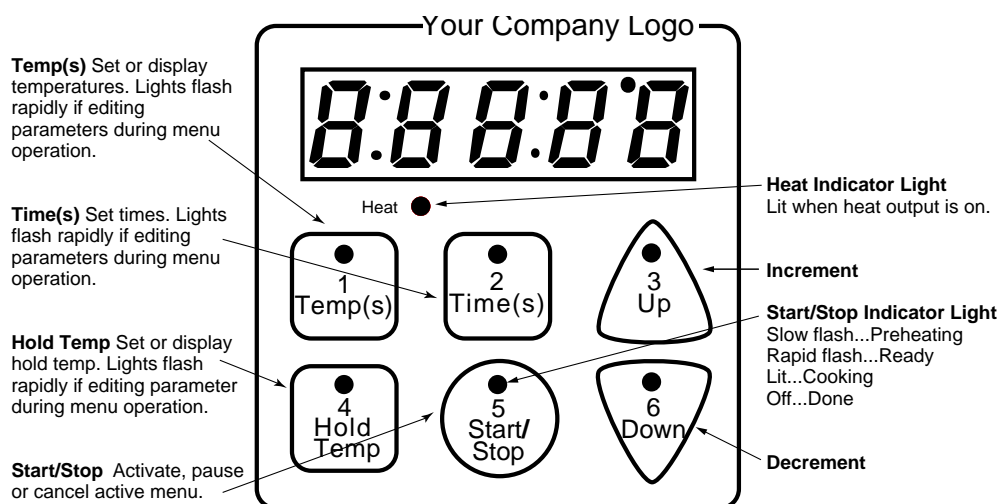5. Set the controller security.
6. Set the Real-time Clock.

For instructions on Steps 1, 2, 3, 4, 5 and 6, see the *Hardware & Software Setup Guide*.

7. Design, manufacture and apply faceplate overlay for end-users. (For a suggested design to suit this application, see this section. For overlay dimensions and guidelines, see the *Hardware & Software Setup Guide*.)
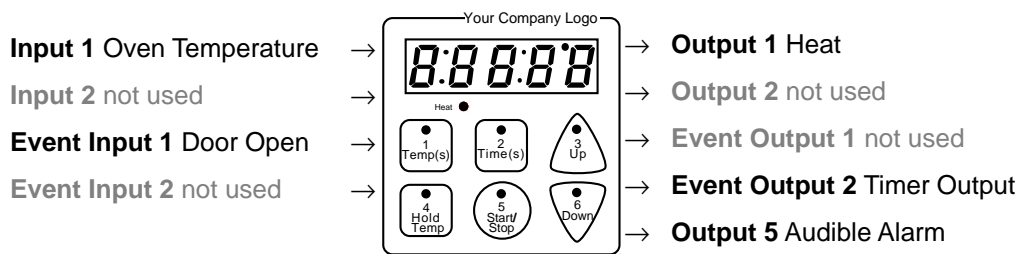8. Operate the controller. (See this application guide.)

Key Functions in Configuration Mode

MINICHEF 2000

Display five-digit, seven-segment numeric LED display.

Indicator lights (1 for each key, 2 for heat channels).

G H

Edit key (A) Access the next level of parameters or values.

A Edit

B Enter

C ▲

Up key (C) Move up the lists.

Enter key (B) Enter the value and return to previous level.

Escape key (E) Return to original value when editing a parameter value.

Home key (D) Move to Operation Mode with a two-second key press.

D Home

E Escape

F ▼

Down key (F) Move down the lists.

Key Functions in Operation Mode

Your Company Logo

Temp(s) Set or display temperatures. Lights flash rapidly if editing parameters during menu operation.

Time(s) Set times. Lights flash rapidly if editing parameters during menu operation.

Heat ●

Heat Indicator Light Lit when heat output is on.

1 Temp(s)

2 Time(s)

3 Up

Increment

Hold Temp Set or display hold temp. Lights flash rapidly if editing parameter during menu operation.

4 Hold Temp

5 Start/ Stop

6 Down

Start/Stop Indicator Light Slow flash...Preheating Rapid flash...Ready Lit...Cooking Off...Done

Start/Stop Activate, pause or cancel active menu.

Decrement

Summary of Input/Output Functions

Your Company Logo

Input 1 Oven Temperature → ⟶ **Output 1** Heat

Input 2 not used → ⟶ **Output 2** not used

Event Input 1 Door Open → ⟶ **Event Output 1** not used

Event Input 2 not used → ⟶ **Event Output 2** Timer Output

⟶ **Output 5** Audible Alarm

Note: For details, see wiring instructions in the *Hardware & Software Setup Guide.*

Configuration Mode Quick Reference

These are the functions, parameters and values included in the Configuration Mode for this application. You must select Application 6 to access them. For directions, see the *Hardware & Software Setup Guide*. The Appendix of that guide includes an explanation of all parameters and values

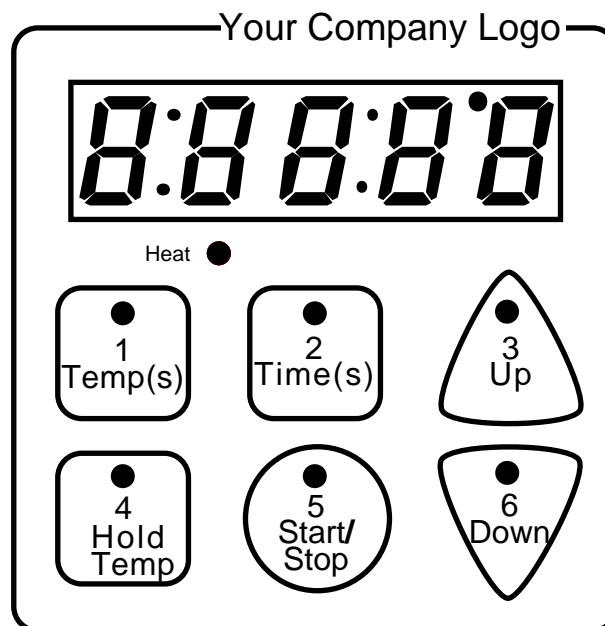| Function	Parameter	Value	Your Settings
`EtYPE` Equipment-Type	`APPL` Application Number	1 - 28	6
	`A_Loc` Application Number Security Lock	Yes, No	
	`t OUt` Timer Output	Yes, No	
	`StEPS` Number of Cooking Steps	1, 2	
`SEtUP` Setup	`℃_℉` Temperature Display Format	°C or °F	
	`t iME` Time Display Format	MMM:SS, HH:MM, H:MM:SS	
	`Ch irP` Key Chirp	On, Off	
	`tc` Thermocouple Type	J, K (shown as `H`), E	
	`rtd` RTD Curve	DIN, JIS	
	`tconP` WatCurve™ Temperature Compensation	On, Off	
	`OFSt1` Temperature Offset, Channel 1	-99 to 99°F (-55 to 55°C)	
	`tr Lo` Temperature Range Low	0°F (-18°C) for RTD inputs 32°F (0°C) for tc inputs to `tr H1`	
	`tr H1` Temperature Range High	`tr Lo` to 1200°F (649°C)	
	`rEAdY` Preheat Ready Feature	Yes, No	
	`rbAnd` Ready Band	1 to 1200°F (649°C)	
	`CLoc` Real Time Clock Display	Yes, No	
	`PLOSS` Power Loss Menu Resume	Yes, No	
	`AL 1` Alarm for Channel 1	None, Dev, Proc, Both	
	`AL P1` Absolute Process Alarm 1	100 to 1200°F (38 to 649°C)	
	`ALdL1` Low Deviation Alarm 1	-999 to 0°F (-555 to 0°C)	
	`ALdH1` High Deviation Alarm 1	0 to 999°F (0 to 555°C)	
`tHErL` Thermal	`tYPE` Temperature Control Type	Pid, On-Off	
	`HYSt1` Hysteresis 1	1 to 99°F (1 to 55°C)	
	`P id U` PID Units	SI, US	
	`tunE1` Auto-tuning 1	On, Off	
	`ProP1` Proportional Band 1	1 to 999°F (1 to 555°C)	
	`rSEt1` Reset (integral) Gain 1	0.00 to 9.99 repeats/minute	
	`int 1` Integral Gain 1	0.00 to 99.99 minutes/repeat	
	`rAtE1` Rate (derivative) Gain 1	0.00 to 9.99 minutes	
	`dEr 1` Derivative Gain 1	0.00 to 9.99 minutes	
	`CYcL1` PID Cycle Time 1	1 to 60 seconds	
`d iAg` WatHelp Diagnostics	Used for equipment troubleshooting and testing. Not used when programming. See the *Hardware & Software Setup Guide.*		

Auto-tuning Note:

Before auto-tuning Application 6, `tENP 1` in the operations menu must first be set to a value that is typical of your application. (See *Hardware & Software Setup Guide* for information on programming menus.) Then set `tHErL` / `tunE 1` to `on`. After you accept `on`, by pressing "Enter," the controller will display `tunE` while auto-tuning is taking place.

The controller will cancel the auto-tuning process if it cannot be completed in 80 minutes. You can cancel the auto-tuning process at any time by pressing either key C or key D and accepting `OFF`, by pressing "Enter," when it appears.

Step 7 Design a Faceplate Overlay

To complete the installation, you must apply a graphic membrane to the front panel of the controller. The following artwork will help you design and create a membrane for this application. For more dimensions and guidelines, see the *Hardware & Software Setup Guide*.

Suggested End-user Overlay:

This Prototyping and Training Membrane Overlay will help you with the configuration and programming steps. To order it, see the Ordering Information at the back of this guide.

Step 8 Operate the Controller

Summary of Key Functions in Operation Mode

Key	Operation Function
A	Cook Temp(s)
B	Cook Time(s)
C	Up (Increment)
D	Hold Temp
E	Start/Stop
F	Down (Decrement)

Start-up

Apply power to the oven.

idLE will appear on the display.

If the Real Time Clock option is installed and **SEtUP** / **t iME** is programmed, the time of day will appear on the display.

Set the Menu

Depending on the way the controller was programmed at **EtYPE** / **StEPS** you can set the menu to run in one step or two.

EtYPE / **StEPS** = **1**: Single Step Menu

EtYPE / **StEPS** = **2**: Two Step Menu

Single Step Menu

The single step menu consists of one cooking temperature, one cooking time and one hold temperature.

Set the cooking temperatures.

1. Press the Cook Temp key **tEMP 1** and then the cooking temperature value will appear on the display.

2. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

3. Press the Cook Temp key again.

    The cooking temperature has been set.

    idLE will appear on the display.

Set the cooking time.

1. Press the Cook Time key `t inE i` and then the cooking time value will appear on the display.

2. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

3. Press the Cook Time key again.

   The cooking time has been set.

   `idLE` will appear on the display.

Set the Hold Temperature.

1. Press the Hold Temp key `HtEnP` and then the hold temperature value will appear on the display.

2. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

3. Press the Hold Temp key again.

   `idLE` will appear on the display.

   The menu you have set becomes the current menu for the controller operation.

Five Second Timeout

When using the up or down keys to change a value, if you do not press any key for 5 seconds, the controller will automatically be set to the last value on the display and return to `idLE`.

Two Step Menu

The two step menu consists of two cooking temperatures, two cooking times and one hold temperature.

Set the two cooking temperatures.

1. Press the Cook Temp key `tEnP i` and then the first cooking temperature value will appear on the display.

2. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

3. Press the Cook Temp key again.

   The first cooking temperature has been set.

   `tEnP2` and then the second cooking temperature value will appear on the display.

4. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

5. Press the Cook Temp key again.

   The second cooking temperature has been set.

   `idLE` will appear on the display.

Set the two cooking times.

1. Press the Cook Time key `t iME 1` and then the first cooking time value will appear on the display.

2. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

3. Press the Cook Time key again.

   The first cooking time has been set.

   `t iME2` and then the second cooking time value will appear on the display.

4. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

5. Press the Cook Time key again.

   The second cooking time has been set.

   `idLE` will appear on the display.

Set the Hold Temperature.

1. Press the Hold Temp key `HtEMP` and then the hold temperature value will appear on the display.

2. Press the Up-arrow or Down-arrow key until the value you want appears on the display.

3. Press the Hold Temp key again.

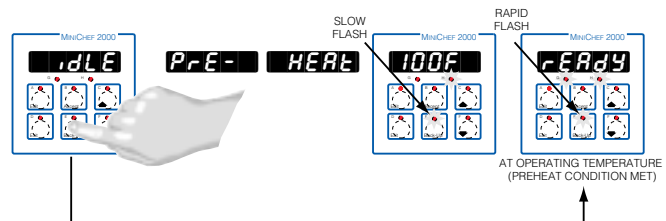   The Hold temperature has been set.

   `idLE` will appear on the display.

   The menu you have set becomes the current menu for controller operation.

Five Second Timeout

When using the up or down keys to change a value, if you do not press any key for 5 seconds, the controller will automatically be set to the last value on the display and return to `idLE`.

Preheat

If the `rEAdy` parameter under the `SEtUP` function in the Configuration Mode is set to yes, when you press the Start/Stop key to activate the menu, the controller will detect temperatures and preheat to operating temperature (above relative set point minus the ready band) as required.

If the oven is not at operating temperature, it will preheat. Meanwhile:

• The word `PrE-` `HEAt` will appear on the display for a few moments. The Start/Stop key indicator light will flash slowly. The temperature of Channel 1 will be displayed until the operating temperature is reached.

• The heat output indicator light - G, just below the display- will light up whenever the controller is calling for heat.

When the oven is at operating temperature (above the relative set point minus the ready band) `rEAdY` will appear on the display and the Start/Stop key indicator light will flash rapidly. You are now ready to cook with the active menu.
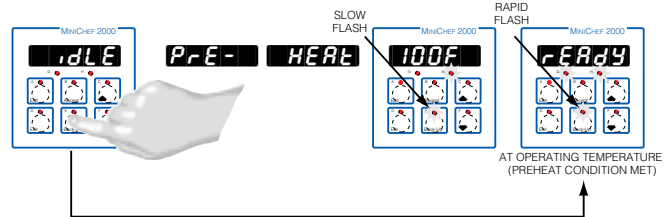
If the oven is at operating temperature, the display goes directly to `rEAdY` without indicating preheat or temperature.

Note: You can skip preheat and go directly to the cooking sequence by pressing the Start/Stop key a second time.

Run a Menu (with preheat feature)

This procedure describes how to run an active menu when the preheat feature is active (when the `rEAdY` parameter in the `SEtUP` function of the Configuration mode is set to `YES`).

1. Set the menu as shown earlier.

2. With `idLE` or time of day on the display, press the Start/Stop key.

If the preheat condition has not been met, the oven will preheat until `rEAdY` appears on the display.

Note: You can skip preheat and go directly to the cooking sequence by pressing the Start/Stop key a second time.

If the oven is already at operating temperature `rEAdY` will appear on the display.

3. With `rEAdY` on the display, place the food in the oven Then press the Start/Stop key (indicated by the rapidly flashing indicator light).

The Start/Stop key indicator will light up. Time will count down on the display.

Depending on the way the controller was programmed at `EtYPE` / `StEPS` the menu will run in one step or two.

One Step

Countdown time is displayed.

Set point 1 will run until time expires.

Two Step

Countdown time is displayed. It is the total of the programmed Time 1 plus Time 2.

Set point 1 will run until Time 1 expires.

Set point 2 will run until Time 2 expires. You will not see the switch-over from Time 1 to Time 2.

4. When the cooking sequence is complete,the unit will switch to the Hold sequence. An audible tone will sound for two seconds.

The display will alternate slowly between `HoLd` and count up time.

The unit will count up time indefinitely. The hold sequence will end and the controller will go into idle when you cancel the current menu by pressing the Start/Stop key.

5. Once the controller goes into idle, the Start/Stop key indicator light will switch off.

6. To repeat cooking, repeat steps 1 through 4.

Run a Menu (without preheat feature)

This procedure describes how to run an active menu when the preheat feature is inactive (when the `rEAdy` parameter in the `SEtUP` function of the Configuration mode is set to `no`).

1. Select the menu you want to run as shown earlier.

2. With idle on the display, place the food in the oven.

3. Press the Start/Stop key.

   The Start/Stop key indicator will light up. Time will count down on the display.

   Depending on the way the controller was programmed at `EtYPE` / `StEPS` the menu will run in one step or two.

   One Step

   Countdown time is displayed.

   Set point 1 will run until time expires.

   Two Step

   Countdown time is displayed. It is the total of the programmed Time 1 plus Time 2.

   Set point 1 will run until Time 1 expires.

   Set point 2 will run until Time 2 expires. You will not see the switch-over from Time 1 to Time 2.

4. When the timed cooking sequence is complete, the unit will switch to the Hold sequence.

   An audible tone will sound for two seconds.

   The display will alternate slowly between `Hold` and count up time.

   The unit will count up time indefinitely. The hold sequence will end and the controller will go into idle when you cancel the current menu by pressing the Start/Stop key.

5. Once the controller goes into idle, the Start/Stop key indicator light will switch off.

6. To repeat cooking, repeat steps 1 through 4.

View Actual Oven Temperature

You can view the actual oven temperature by pressing and holding the Cook Temp key for three seconds.

Adjust a Menu While Cooking

You can adjust the temperature and time settings during the cooking and hold sequences by performing the actions shown under "Set the Menu" earlier in this section.

Changes can be made to temperature and time only during the portion of the cooking sequence in which they are active. For example: a change to the first cooking temperature `tEMP 1` can be made only when the first cooking temperature is being run during

the cooking sequence.

Temperature changes made while cooking are saved and become part of the permanent menu. Time changes are not saved and do not become part of the permanent menu.

Pause a Menu

While cooking, you can pause cooking time by pressing the Start/Stop key once. The Start/Stop key indicator light will flash rapidly **PAUSE** will appear on the display. Countdown time will resume when you press the active menu key again.

Cancel a Menu

Canceling a menu stops the controller completely. The controller does not maintain set point temperatures or run time. You cancel a menu to change the menu, stop the menu operation for any reason, or are preparing to shut off the oven.

- Press the Start/Stop key for 2 seconds (in hold, momentarily press the Start/Stop key). Heat outputs will switch off. Heat output indicator lights will switch off. **idLE** or time of day will be on the display.

Change Menu or Restart

With the controller in idle:

1. Set the menu as shown earlier.

2. Press the Start/Stop keys.

Door Opening

When you open the oven door (uses Event Output 1 for switch closure. Switch closure indicates the door is open) the unit will act as described below.

During the cooking sequence: time is paused and **door** will appear on the display. The heat will shut off.

During the preheat or hold sequence: **door** will appear on the display. The heat will shut off.

When you close the door the unit will operate normally.

Event Outputs

If **EtYPE** / **t OUt** in the Configuration Mode is set to **YES**, when time is counting down Event Output 2 is on. It is off during Pause, Idle or Hold.

Temperature Alarms

The controller will alert you to temperature alarm conditions if they occur. If an alarm occurs, take action as determined by your supervisor. See the Appendix in the *Hardware & Software Setup Guide* for a Troubleshooting Chart and a summary of temperature alarms.

Errors

The controller will alert you to errors if they occur. Errors are critical problems that shut down the unit. If an error occurs, an error message will appear on the display. You should switch off the power and call for service.

See the Appendix in the *Hardware & Software Setup Guide* for a Troubleshooting Chart and a summary of errors.

Specifications (1032)

Control Mode
- Single and dual heat channels, PID or on/off.[1]
- Microprocessor-based, programmable, reverse-acting control outputs.
- User-selectable embedded application software defines operation of display, keys, inputs, outputs, timing action.
- One-step auto-tuning, WatHelp diagnostics, WatCurve temperature compensation.

Agency
- CE approved:
  - 89/336/EEC Electromagnetic Compatibility Directive
    - -EN 50081-1: Emissions
    - -EN 50082-1: Immunity
  - 73/23/EEC Low-Voltage Directive
    - -EN 60730-1 and EN 60730-2-9: Safety
- NSF Listed, Criteria 2.[5]
- AGA: UL tested to AGA standard Z21.23, UL File #E43684.
- UL and C-UL recognized, UL 197, 873, 991 and CSA standard C22.2-24, File # E43684.

Operator Interface
- Membrane overlay, contamination and water resistant, (supplied by customer).
- LED display, 5-digit, 0.56 in high, red.
- Displays times, temperatures, user prompts and diagnostic codes.
- User-selectable time and temperature display formats.
- Temperature display formats—°F or °C.
- Time display formats—H:MM:SS, HH:MM, or MMM:SS.
- 8 discrete indicator LEDs, red.
- 6 tactile feedback keys.
- Menu-driven operation and manual modes available.
- WatHelp diagnostics.
- Real-time clock option displays time of day.

Accuracy
- Calibration accuracy and sensor conformity[2]: ± 2.0°F for Type J thermocouple and RTD, ± 0.35% of span for Type K and E thermocouples, ±1 LSD, 77°F ± 5°F ambient and rated line voltage of ±10%.
- Accuracy span: 1000°F (540°C) minimum.
- Temperature stability: ± 0.15°F/°F (0.15°C/°C) change in ambient typical.

Sensors/Inputs
- Contact inputs, TTL compatible with internal pull-up resistor, two available.
- Thermocouple,[3] software selectable Type J, K or E, 32 to 1200°F. (Dual-channel applications require at least one ungrounded thermocouple).
- RTD,[3] 2- or 3-wire, platinum, 100, 500, 1000Ω, at 0°C, software selectable DIN or JIS curves, 0 to 1200°F (3-wire will function as 2-wire).
- Input A/D resolution: 15 bit.

Output Options
- Solid-state relay, 0.4A, with or without contact suppression.
- Switched dc signal, 4.5V to 5.25V, 30mA maximum output, minimum load resistance > 150Ω, non-isolated.

Audible Output Options
- Switched dc signal, 4.5V to 5.25V, 30mA maximum output, minimum load resistance > 150Ω, non-isolated.
- Internal audible alarm, 75dB at 10 cm.

Connectors
- Sensor Input Terminal Strip[4]: RIACON, 6-position, quick-connect.
- Power Supply & Input/Output Terminal[4]: AMP, 15-position, quick-connect.

Power/Line Voltage
- 20.4 to 26.4V~ (ac), 47 to 63Hz.
- 15VA maximum.
- For CE applications, input power must be limited to 15W external to the control.
- Program retention upon power failure via non-volatile memory.
- Battery/real-time clock option: 6-year lithium battery, provides power backup upon power failure, operation resumption after power recovery, ability to display time of day.

Operating Environment
- 32 to 176°F (0 to 80°C), 0 to 90% RH, non-condensing.

Storage Temperature
- -40 to 176°F (-40 to 80°C).

Mechanical
- Case: polycarbonate Lexan with adjustable mounting collar (vertical or horizontal orientation), designed for mounting on 16-, 18-, 20- and 22-gauge panels.
- Internal panel mounting requires a specified panel cutout and four #6-32 studs or equivalent.
- Overall width x height x depth: horizontal - 4.13 in x 3.25 in x 2.00 in; vertical - 3.25 in x 4.13 in x 2.00 in (Assumes mating connectors are attached. Does not include wire bundle space requirements.).
- Vibration: 2g, 10 to 150Hz, applied in any one of three axes.
- Weight: 6.50oz maximum.

Program Storage
- All non-embedded user and factory programs are stored in non-volatile memory. Can be changed by repro gramming.

Sample/Update Rates
- 1 input: 4Hz.
- 2 inputs: 4Hz.
- PID: 1Hz.
- Control outputs: 100Hz.
- Display: 10Hz.

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[1] The MINICHEF 2000 controller is to be used in systems with an external high temperature limiting device.

[2] Thermocouple lead resistance of 200Ω causes < 1°C error. RTD, 22 gauge wire will not contribute more than 0.086°F error/ft.

[3] Dual channel applications require either two thermocouple sensors or two identical RTD sensor types.

[4] For mating connector information, see Ordering Information Accessory section.

[5] Certified for thermometer accuracy (oven and hot food holding applications from 32°F to 60°F) when used with RTD or type J thermocouple probes.

Ordering Information

(1033)

F 2 H A - _ _ _ **1 -** _ _ _ **A A**

MINICHEF™ 2000
Cooking controller with numerous food
equipment application software sets,
single and dual channel on/off or PID
temperature regulation, timer and
machine-function control, microprocessor-
based, programmable, auto-tuning,
WatCurve, WatHelp diagnostics,
24V~ (ac) power input, agency approved,
flush mounted (membrane faceplate
supplied by customer).

Inputs
1 = Dual thermocouple, Type J, K or E
2 = Dual RTD, platinum, 100Ω, curve
    selectable
3 = Dual RTD, platinum, 500Ω, curve
    selectable
4 = Dual RTD, platinum, 1000Ω, curve
    selectable
**Note: All models include two event inputs,
switched dc logic signal, non-isolated.**

Output Number 1
1 = Switched dc, 5V nominal, 30mA,
    non-isolated
2 = Solid-state relay, Form A, 0.4A,
    without RC suppression
3 = Solid-state relay, Form A, 0.4A,
    with RC suppression

Output Number 2
1 = Switched dc, 5V nominal, 30mA,
    non-isolated
2 = Solid-state relay, Form A, 0.4A,
    without RC suppression
3 = Solid-state relay, Form A, 0.4A,
    with RC suppression

Event Outputs 1 and 2
1 = 2 event outputs, switched dc, 5V nominal,
    30mA, non-isolated

Battery and Real-time Clock
0 = None
1 = Includes battery and real-time clock

Audible Alarm
0 = Alarm signal available at connector,
    switched dc, 5V nominal, 30mA, non-isolated
1 = Internal alarm included

Software
AA = Standard Food Equipment Application
     Software Set
XX = Custom Set-up parameters or Made-To-Order
     custom software. Consult your local Watlow
     Sales Engineer. Code number assigned by factory.

Ordering Information: Part Numbers & Accessories

MiniChef 2000 Accessories

0836-0442-0000	Sensor Input Mating Connector, (RIACON #31007106), 6-position, quick-connect terminal, screw connection for 28-14 AWG wires, tighten to 7 in/lb
A001-0298-0000	Power Supply and I/O Mating Connector Kit. Includes: – 1 AMP #1-640523-0, 15-position, quick-connect terminal – 15 AMP #641300-1 crimp pins
0238-0679-0000	Prototyping & Training Membrane Overlay, adhesive-backed, 4.75 in x 4.75 in
0830-0479-0000	Prototyping EPROM Extraction Tool, AMP #821980-1
A001-0249-0001	120V~ to 24V~ (ac), stepdown transformer, class 2, quick-connect terminals included
A001-0249-0002	208/240V~ to 24V~ (ac), step-down transformer, class 2, quick-connect terminals included

Recommended Sources of Supply for Miscellaneous Items

DURA-TECH, Inc. LaCrosse, WI (608) 781-2570	•*Custom Membrane Faceplates*
AMP, Inc. Harrisburg, PA 1-800-522-6752	•*Prototyping EPROM Extraction Tool* Part No. 821980-1 •*Pin Crimping Hand Tools* Part No. 90325-1 or 58514-1 •*Pin Extraction Hand Tool* Part No. 455822-2
RIA Electronic, Inc. Eatontown, NJ (908) 389-1300	•*RIACON Connectors*

MiniChef 2000 Documentation

WMC2-XUGN-0000	The Complete MiniChef 2000 User Guide
WMC2-XADN-0000	The Complete MiniChef 2000 User Guide on CD
WMC2-XTDN-0000	MiniChef 2000 Tutorial Disk
WMC2-XSGN-0000	Hardware & Software Setup Guide
WMC2-XAGN-0001	Cook-&-Hold Oven Application Guide
WMC2-XAGN-0002	Convection Oven Application Guide
WMC2-XAGN-0003	Deepfat Fryer Application Guide
WMC2-XAGN-0004	Griddle Application Guide
WMC2-XAGN-0005	Timer Application Guide
WMC2-XAGN-0006	Shelf-Timer Application Guide
WMC2-XAGN-0007	Rotisserie Oven Application Guide

Watlow Controls

Watlow Controls is a division of Watlow Electric Mfg. Co., St. Louis, Missouri, a manufacturer of industrial electric heating products since 1922. Watlow begins with a full set of specifications and completes an industrial product that is manufactured totally in-house, in the U.S.A. Watlow products include electric heaters, sensors, controls and switching devices. The Winona operation has been designing solid state electronic control devices since 1962, and has earned the reputation as an excellent supplier to original equipment manufacturers. These OEMs depend upon Watlow Controls to provide compatibly engineered controls that they can incorporate into their products with confidence. Watlow Controls resides in a 100,000-square-foot marketing, engineering and manufacturing facility in Winona, Minnesota.

Technical Assistance

If you encounter a problem with your Watlow controller, refer to the Troubleshooting Chart in this guide. Also review all of your configuration information for each step of the setup to verify that your selections are consistent with your applications.

If the problem persists after checking all the steps, you can get technical assistance by calling Watlow Controls at (507) 454-5300, between 7 a.m. and 5 p.m. CST, and asking for an applications engineer. When you call have the following information on hand: the controller's part number, date code, serial number, software revision number, and application number. Much of this information is available on the controller case. All of this information is also available via the MINICHEF 2000 main display by accessing the WatHelp Diagnostics Function under `d iAG` in the Configuration Mode.

We Value Your Feedback

Your comments and suggestions on this manual are welcome. Please send them to, Technical Writer, Watlow Controls, 1241 Bundy Blvd., P.O. Box 5580, Winona, MN 55987-5580 or call (507) 454-5300 or fax (507) 452-4507.

Contact
- Phone: (507) 454-5300.
- Fax: (507) 452-4507.
- For technical support, ask for an Applications Engineer.
- To place an order, ask for Customer Service.
- To discuss a custom option, ask for the MINICHEF 2000 Product Manager.

Warranty

The MINICHEF 2000 is warranted to be free of defects in material and workmanship for 36 months after delivery to the first purchaser for use, providing that the unit has not been misapplied. Since Watlow has no control over its use, or misuse, we cannot guarantee against failure. Watlow's obligations hereunder, at Watlow's option, are limited to replacement or refund of purchase price of a unit which upon examination proves to be defective within the warranty period. This warranty does not apply to damage resulting from transportation, alteration, misuse, or abuse.

Returns
- Call or fax Customer Service for a Return Material Authorization (RMA) number before returning a control.
- Put the RMA number on the shipping label, and also on a description of the problem.
- 20% of net price restocking charge applies to all standard units returned to stock.

Note: All documentation of the MINICHEF 2000 is subject to change without notice.

Ordering Information (1033)

F 2 H A - _ _ _ 1 - _ _ A A

MINICHEF 2000™
Cooking controller with numerous food
equipment application software sets,
single and dual channel on/off or PID
temperature regulation, timer and
machine-function control, microprocessor-
based, programmable, auto-tuning,
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24V~ (ac) power input, agency approved,
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1 = Internal alarm included

Software
AA = Standard Food Equipment Application
        Software Set
XX = Custom Set-up parameters or Made-To-Order
        custom software. Consult your local Watlow
        Sales Engineer. Code number assigned by factory.

the display. (The message, which varies based on programming at `M` / `ALArn` will appear for ten seconds.)

An audible tone will sound for five seconds. Time will continue to count down on the display.

4. When the cooking cycle is finished one of the following will happen, depending on the way the controller was programmed at `EtYPE` / `Sound`.

   With Sound set to 0: The controller automatically switches to idle, where the controller maintains the temperatures at set point and does not run time. `idLE` or time of day will appear on the display. The menu key indicator light will flash slowly.

   With Sound set to 1, 2, or 3, `End` will appear on the display and an audible tone will be emitted. The menu key indicator light will flash rapidly. You can acknowledge and silence the tone by pressing the active menu key or it will time out in 1 to 20 seconds and go into idle. The menu key indicator light will flash slowly.

   With Sound set to 4 or 5, `End` will appear on the display and the menu key indicator light will flash rapidly. You must acknowledge the audible tone by pressing the active menu key. Once acknowledged, the tone is silenced and the controller goes into idle The menu key indicator light will flash slowly.

5. Remove the food from the fryer. The controller will continue to regulate to the last set point. The menu key indicator light will flash slowly.

6. To repeat cooking, repeat steps 1 through 5.

Run a Menu (without preheat feature)

This procedure describes how to run a menu when the preheat function is inactive — that is, when the `rEAdY` parameter in the `SEtUP` function of the Configuration Mode is set to `no` — and initial preheat power-up has been completed.

1. With `idLE` on the display, place the food in the fryer.
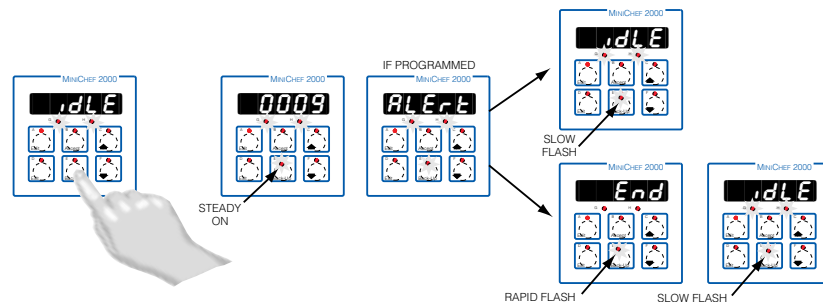
2. Press the key for the menu you want to run. The menu key will light up and then time will count down on the display.:

3. If programmed, as the time counts down, a mid-menu alarm message `M` / `ALArn` will appear on the display.

   The alarm message, which varies based on programming, will appear for ten seconds.

   An audible tone will sound for five seconds. Time will continue to count down on the display.

4. When the cooking cycle is finished one of the following will happen, depending on